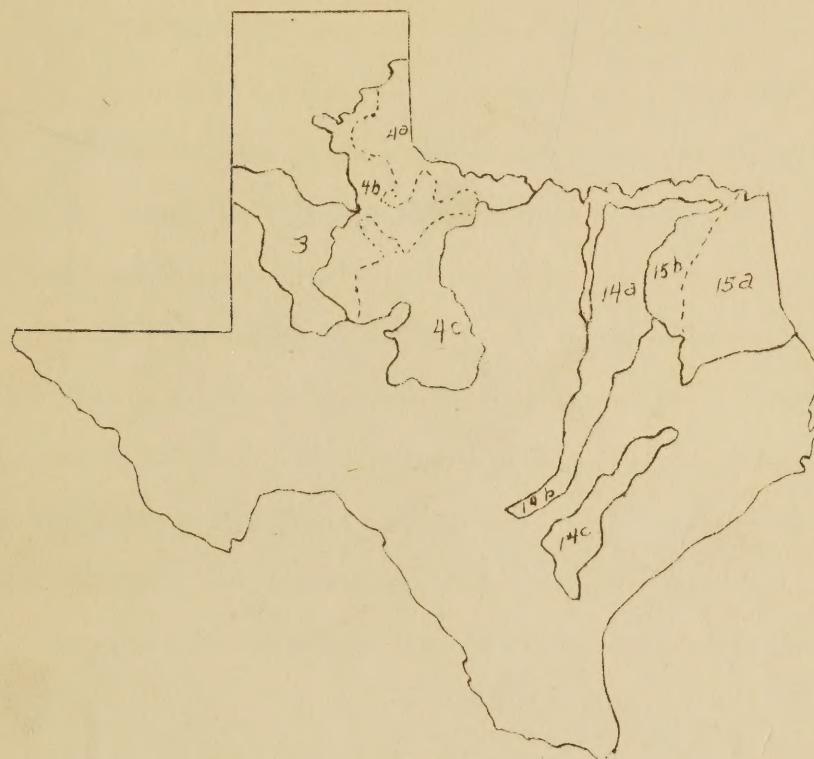


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An Analysis of Demand and On-Farm Supply  
in Four Major Types of Farming Areas, 1943



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Bureau of Agricultural Economics  
U. S. Department of Agriculture

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## TEXAS FARM LABOR

An analysis of demand and on-farm supply  
in four major type-of-farming areas, 1943

Ronald W. Jones 1/, John R. Wenmohs 2/, and Joe R. Motheral 3/

**Manpower.** Today war-born shortages; yesterday mass unemployment; tomorrow --? But always the full and efficient use of manpower in balance with other productive resources to maintain a high level of production stands as a matter of primary national concern. In war, full employment and balanced capacity-production are proven to be essentials of national survival. With the return of peace they become our first line of defense against economic depression and individual insecurity; the surest means toward maximum satisfaction of human wants. In meeting the continuing heavy demands upon agricultural labor resources and later adjusting the economy to a sound long-range peacetime basis, problems will arise whose effective solution requires a thorough understanding of all phases of labor utilization.

### The Farm Labor Problem -- War and Post-War

Dividing the available manpower between agriculture, the armed forces, war production and other necessary industries, trades and services in such a way as to assure maximum speed in the prosecution of the war has been and promises to continue as one of the knottiest of all war production problems. Essentially the problem is no different from that of allocating steel, rubber, machinery or any other essential and scarce material to the industry and plant which can use it most effectively in meeting overall national war production requirements. The same considerations of efficiency in using scarce materials in terms of immediate and prospective demands of the war should guide the distribution of labor within agriculture.

Farms and areas capable of making the most advantageous use of labor, machinery, fertilizer and land resources in producing those crops and livestock most needed should get first call on farm labor to make sure they are kept in maximum production. Less efficient farms and areas or those whose production is less essential to the war effort should logically receive decreasing amounts of assistance in securing labor, feed, machinery, fertilizer, or other materials. Such a labor priority scheme can be illustrated by assuming for the moment that a value may be assigned to the combination of efficiency in use of labor and essentiality of production on each farm in the nation based on immediate and prospective needs for food, feed and fiber. When part-time farms and retirement units are excluded and the balance then arrayed in descending order of these composite values, the amount of labor required per unit of production increases as one proceeds down the scale from the highest level of efficiency in producing things most needed toward the lowest combination. Below the point on this hypothetical curve defined by agriculture's share in the total supply of manpower

1/ Bureau of Agricultural Economics

2/ Texas Agricultural Extension Service. Resigned

3/ Texas Agricultural Experiment Station. On leave with the U. S. Navy

continued agricultural production becomes detrimental to the war effort inasmuch as it can be maintained only at the expense of underutilizing more efficient farms or of direct war production. Persons working farms below this minimum level of operating efficiency would need to be encouraged to accept more productive employment either on other farms or in war industries if true national maximum production is to be realized.

But in practice a solution to the nation's manpower problems is far less simple. The farm labor situation during the war has been complicated by the marked prewar differences with respect to operating efficiency, underemployment kind of production, etc. between types and sizes of farms, production areas and sections of the United States and hence by the nature and extent of change required to bring about true maximum national wartime production. For a great many reasons war plants and cantonments were not always built in those areas having the greatest surplus of labor. Farm people in the immediate vicinity of these developments were drawn into war construction and production jobs in large numbers. Many of these had to be replaced by workers from other areas in order to keep efficiently operated farms fully manned. Similarly, the armed forces drew from all parts of the nation and, particularly in the early days of the war, many men essential to maintaining and expanding agricultural production were taken from farms. Only to the extent that necessary replacements in agriculture are made by persons now less productively employed can overall production be maintained or increased. Such adjustments toward more effective use of labor require quick and easy movement of workers between farms, areas, and States. Much of our real manpower problem stems from a characteristic inertia of workers and the general resistance of employers, even in areas of low labor productivity, to any reduction in their labor pool as both have retarded these adjustments.

Efficient use of farm labor is equally as important to maximum national production as is full employment in terms of days available for work. Labor productivity or the amount of socially necessary goods an average worker using operating equipment common to a given area produces while working a full day is reflected in the level of wage rates paid in that area. Just as the price which farmers will pay for a piece of machinery or a bag of fertilizer under normal conditions represents their estimate of how much its use will add to their production and net income, so do farm wage rates reflect the productivity of labor in any given area especially under wartime conditions of full employment opportunities. Farmers generally have overlooked the significance of area and regional wage rate differences. Nor have administrators taken full advantage of this criterion of efficiency of labor use in planning and carrying out programs to utilize more fully manpower resources. If the existing pricing system accurately reflects national needs for the respective products including direct war goods, then low farm wage rates signify a low level of production per man. In both instances "low" is relative to an alternative use for the same quality labor in other agricultural areas or in industry.<sup>4/</sup> Unless there is a surplus of labor in the area, low wage rates reflect inefficient use of the operator's time and that of his family as well as that of hired labor. It follows therefore that maintaining or increasing excessively high labor cost production in a period of labor scarcity is to increase, unnecessarily, labor costs to efficient producers. In the short run, at any rate, production may be reduced in efficient low labor cost areas if farmers can maintain their net farm income by working larger acreages of crops requiring less labor.

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<sup>4/</sup> Real wages rather than actual dollar values measure the relative productivity of labor. This difference is particularly significant when comparing farm wage rates with earnings of industrial workers.

Maximum wartime production has been rather generally misconstrued to mean that agricultural production should be expanded on all farms irrespective of size, productivity or efficiency, and so in every community, county, area and state regardless of circumstances. That national war needs may best be served by reducing substantially the intensity of farming in poorly adapted, high labor cost areas and by the combination of small farms into more efficient units has not been widely recognized nor understood by the residents of such areas. Efforts to encourage underemployed workers to accept more productive employment in other farming areas or war industry have been generally misunderstood and locally protested. Largely as a consequence of inadequate factual data regarding the volume, location and effectiveness of use of the agricultural labor supply, farm manpower policies and programs to date have been marked by confusion; guided more by group pressures and anticipation of shortages than by a realistic understanding of national needs. Farmers' record of production is truly astounding, yet who can say how much greater total war production might have been if labor wastes and lost motion could have been further reduced.

That manpower problems will vanish with the cessation of hostilities is purely wishful thinking. With demobilization of the armed forces and re-conversion of war industries, the present problems characterized by more jobs than there are people to fill them will give way to the potentially more serious situation of more people than jobs. More serious because of the tendency to allow unemployment to become an individual rather than public responsibility, particularly until urban unemployment becomes widespread and economic depression is well advanced. Yet peacetime full employment with a high rate of production and consumption of goods and services are matters of utmost public concern for they are the very foundation of our industrial economy. Efficient agricultural production is as essential in peace as in war to a balanced agricultural industrial economy which is to say that there is no place in our present day capitalistic economy for a large body of underemployed people in agriculture. Subsistence farms produce little marketable surplus, hence, afford their operators little purchasing power, and so provide no basis for industry which is founded upon exchange of goods. Nor can farmers as a group prosper for long in the absence of a high level of industrial activity and employment.

A natural reaction to the inconveniences of current labor shortages and the availability of a large number of returning servicemen and temporarily displaced war workers will be to employ many persons in low-paying unproductive jobs and press large numbers of them back on farms. There will undoubtedly be many well-intentioned but misguided schemes advanced for helping returning servicemen acquire small homesteads. If such homesteads do not provide a man an opportunity to take full advantage of modern machinery and use his time fully and productively, they can more easily prove millstones about their operators' necks than reward for valorous service. Only careful advanced planning based on full knowledge of circumstances and vigorously prosecuted educational and action programs can assure a land settlement pattern consistent with the American ideal of full employment and a high level of living for all people.

#### Purpose of the Present Study

This study really had its origin in the efforts of the Texas Farm Labor Committee to secure a sound factual basis for making recommendations on farm labor policy. Later, when the Extension Service assumed responsibility for recruiting and placing agricultural workers, the need became more pressing for research on the supply of farm labor, seasonal requirements for current crop and livestock production and the extent and effectiveness of the present use of labor as a basis

for planning and conducting a farm labor placement program. The 1943 Manpower Inventory survey provided a much needed basis for such specific research.

In addition to the primary purpose of supplying needed factual data, this project has sought to investigate further the advantages to be gained from close cooperation between research, education and action groups in all phases of attack upon definite social and economic problems. It is thought that by participating in planning the research and following through its various stages, the users of such research data can assure its best serving their needs. By thus becoming thoroughly familiar with the material, the education and action groups should also be better able to interpret and use the results advantageously. Similarly, the research workers are brought into closer contact with current problems, and have an opportunity of seeing their findings applied to specific uses. Such laboratory tests should materially improve the value of social science research.

This report for Texas is a start toward filling some of the gaps in factual information on the supply of and demand for farm labor which will facilitate placing farm workers when and where needed during the war, help guide the readjustment of workers occasioned by demobilization and re-conversion to peace-time production, and provide a research basis for balancing labor, land and capital resources within agriculture and between agriculture and other phases of the national economy in the post-war period. Conditions have changed much since the spring of 1943 and will continue to change. But a benchmark -- the number of farms of different sizes, their organization, labor force and demand-supply characteristics of labor use -- will add much to our present inadequate store of knowledge basic to meeting impending problems.

This study and report are based on the premise that war and post-war farm labor policies and programs must be planned with respect to the existing and prospective pattern of agriculture. Further that both the action and educational phases of any adjustment program are most effective when directed specifically toward those areas and those kinds and sizes of farms within areas needing to make particular types of adjustments. Information can be made a powerful tool for implementing nationally and locally desirable adjustments, for any proposed change must be acceptable to the people by offering them economic or social gain.

#### Source of Data

Information for the present study was obtained from the statewide 1943 Farm Plan Worksheet and Manpower Inventory survey of all farms made in the spring of 1943 by County War Boards. This preliminary report is based on a part of the data secured for a sample of farms in each of 53 selected counties representing the 18 major type-of-farming areas of Texas. 5/ Only four of these major areas are considered in this preliminary report: Northeast Sandy Lands (Area 15); Black Prairie (Area 14); Rolling Plains (Area 4); and High Plains Cotton (Area 3). 6/

5/ "A Description of the Agriculture and Type of Farming Areas in Texas"; C. A. Bonnen and B. H. Thibodeaux. Texas Agricultural Experiment Station Bulletin No. 544, June 1937.

6/ The representative counties for which samples were drawn in each area are: Area 15 - Cass and Smith; Area 14a - Bell, Collin and Navarro; Area 14b & c - Fayette and Karnes; Area 4 - Wheeler, Dickens, Jones, Scurry and Wilbarger; and Area 3 - Dawson, Hockley, Lubbock and Lynn.

The data used in this analysis were farmers' intended crop acreages for 1943; livestock on hand January 1, 1943; and the persons by age and sex living on farms at the time the survey was made and expected to be a part of the labor force on that farm during 1943. Details of the procedure followed in drawing the sample and limitations of these data for their present use are given in the Appendix.

#### Definition of Terms

A clear understanding of the terms used in the succeeding tables and discussion is essential to a proper interpretation of the balance of this report. The reader is urged to consider carefully the definitions listed below:

On-farm labor supply is the total amount of labor regularly living on the farm and available for either full time or temporary employment on that farm. The operator and his family, all regular hired hands, share-croppers and members of their families are included in the basis of calculation.

Man-equivalent is the amount of work that an average able-bodied man can perform in a day. The work performance of persons in each of the age and sex groups is expressed as a ratio to the work which "an average able-bodied man" can do in a similar period of time. The man-equivalent value of a group of persons of a given age and sex therefore varies with the relative productivity of the average person in the group while working and also the proportion of the group total which will work under given conditions; that is the capacity and availability of persons in that particular age and sex group.

Capacity refers to the amount of farm work which the average person in a given age and sex group can do while working a full day and is expressed in terms of its ratio to the performance during a similar period of an average adult male worker. The assumed man-equivalent capacity of persons in different age and sex groups by areas is shown in the Appendix.

Availability refers to the proportion of persons in a given age and sex group who can be expected to do farm work under specified conditions. <sup>7/</sup> The assumed "availability" factors by population groups and type of farming areas for two sets of conditions are summarized in Appendix.

Regular labor supply is the man-equivalent value of all persons living on the farm who are regularly engaged in farm work. It therefore consists primarily of adult males plus a small percentage of the women and youths living on the farms who, under existing conditions, are available for full-time farm work during the entire year. The single exception is that males of school age are also included in the regular labor supply during the normal summer vacation months. No persons not residing on the farm are included.

Feasible on-farm labor supply is an approximation of the total amount of work which might be expected to be performed during seasons of peak

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<sup>7/</sup> Fuller discussion of the concept of availability as it is applied in this study will be found in the Appendix.

needs by all persons living on the farm (with incentives to do farm work only slightly greater than those obtaining at the present time). This total is composed of the regular labor supply plus the on-farm reserve of women, girls and boys of school age who may be drawn into the working force during seasonal peaks of labor demand. This secondary source of workers (on-farm reserve) cannot be depended upon to work all the year, but is assumed to receive first call for seasonal work before any additional labor is hired. Since circumstances affecting the availability of persons in the on-farm reserve cannot be accurately foreseen, the feasible on-farm supply is shown on the several charts as a straight line or constant total for all 12 months. In this way it represents a probable maximum which may be expected from the on-farm supply during any specific short period and at the same time avoids the necessity of assuming or predicting what proportion of the reserve will be actively engaged at farm work at different times. 8/

Fluidity of the labor force concerns the relative ease and promptness with which workers can fill job openings. To say that the labor force is "fluid" is to say that the placement of workers within an area or industry is comparatively prompt and so involves a minimum of lost time. In this report it was necessary to assume complete fluidity within the area on overall area analyses and within farm-size groups on the more detailed breakdowns. Assuming that within a particular area, workers are immediately available to take jobs as they are needed tends to underestimate the seasonal shortage. This is significant only in an absolute sense and does not seriously distort the general relationships.

Man month is the amount of work an average adult male can do working full time for a month after making reasonable allowance for bad weather, Sundays, etc. Labor requirements are expressed here in man equivalent months or the number of man equivalent workers needed to do the work required. In this way labor requirements may be compared directly to the labor supply which is calculated in terms of man equivalent workers available for each respective month. A man month varies somewhat due to seasonal differences in the length of working day and number of days in which field work can be done, but averages 20 to 22 days of 10 hours each. The number of hours estimated to be available for crop and livestock work in each of the 12 months are summarized in the appendix.

Off-farm employment is employment of any kind other than on the home farm. Work on other farms as well as non-agricultural employment is included.

#### Method of Calculating Labor Supply and Needs

The data as collected from farmers did not indicate directly the amount of labor needed in 1943 nor the supply available to meet these needs in such a way as to permit comparison. The basic assumptions and procedures followed in calculating the labor requirements by months on different sized farms and the corresponding on-farm labor supply are discussed in detail in the Appendix.

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8/ See Appendix for a more detailed discussion of on-farm labor supply.

Briefly stated the labor needs or requirements were determined by applying to the acres of each crop and number of each class of livestock in the area or in each size of farm group as the case might be appropriate area average hours of man labor required in each month.<sup>9/</sup> To this total of crop and livestock requirements was added an allowance for maintenance and chores. These total hour requirements were then converted to man months on the basis of the number of hours estimated to be available for work in each of the 12 months. In this way labor needs or demands are expressed in terms of the number of man equivalent workers needed to do all the farm work in each month.

Similarly the on-farm labor supply for each area and for each group of farms was derived from the Manpower Inventory data by applying assumed average ratios of availability and capacity to the number of persons in each respective age and sex group.<sup>10/</sup> This common denominator labor supply may be compared directly to the labor requirements as both are expressed in the same terms --- man month equivalents.

Labor requirements calculated in this manner necessarily assume average yields, average operating efficiency and normal weather conditions. Actual conditions obtaining in 1943 may have differed materially from those averages with the result that some of the labor demand-supply relationships indicated by the present analysis may not be typical of 1943 experience. This fact does not detract from the usefulness of these data for advance planning as an assumption of average conditions for any future period is more likely to be realized than any other. For want of requirement data relating specifically to farms of different sizes, area average labor requirements were used for each of the four or five size groups in each of the several type-of-farming areas. This basis tends to underestimate the labor needs on small farms using less machinery than the average and overstates those on large farms which are usually more highly mechanized. The error therefore favors the farms of greatest labor need within each area. Comparisons between areas are not affected. Indications of seasonal shortage or labor surplus derived by the method of the present analysis are relative rather than absolute and so must be interpreted broadly.

Off-farm employment was calculated from the number of months the farmer reported were worked off the farm in 1942 rather than the number anticipated for 1943 in order to use actual behavior rather than unreliable opinions as a basis of study. The information available from the 1943 Manpower Inventory on work off the home farm leaves much to be desired. No detail was obtained on the kind of work done, the time of year performed, nor the location of employment. These limitations are not so important when considering the individual farm, but are conducive to error in overall area analyses. In recruiting seasonal farm workers and in considering the role of off-farm employment in post-war agriculture, it becomes essential to know where farm people who are supplementing their farm earnings with off-farm work are now being employed, the probable future of these opportunities, the distance which farm people migrate to avail themselves of employment opportunities during slack seasons and the amount of supplemental employment provided by other farms in the same area.

#### Productivity of Labor

Productivity of labor has been repeatedly stressed throughout the preceding discussion as one of the most important factors affecting wartime expediency and the long-time welfare of farm people. The data used in the present study are an inadequate basis for the complex analysis of costs and

<sup>9/</sup>"Labor and Power Requirements for Crop and Livestock Production in Texas" Progress Report No. 838 Texas Agri. Experiment Station and Bur. Agri. Economics cooperating  
<sup>10/</sup>Appendix

alternative employment opportunities necessary to the proper evaluation of production efficiency. It is highly important, however, that this factor be kept in mind while interpreting the succeeding tables and charts which are based solely on the extent of utilization of labor resources at the existing level of operating efficiency.

The comparisons summarized in Table 1 will serve to illustrate the net effect of differences in degree of mechanization, climate, and soil productivity on the productivity of labor. Such a comparison incorrectly assumes all costs other than labor, and likewise the quality and per unit value of the product to be comparable in all areas so the results are subject to considerable qualification. Only three crops in four areas of one State are considered here. Productivity of labor, however, must in the final analysis be evaluated in terms of national and world needs not only for agricultural products but also, at the present time, for tanks, guns, planes, ships, shells, and men.

Differences between areas in "cost of producing" cotton, corn, grain sorghum or other crops are largely accounted for by differences in the amount of labor used. These in turn are closely related to the type and size of power and equipment used and, particularly in the case of cotton to the amount of rainfall which determines the amount of hoeing and cultivating needed for weed control. In the High Plains Cotton Area, about 70 percent of the crop acreage is farmed with two-row equipment and 30 percent with four-row tractor equipment. Two-row tractor equipment is used on practically all farms in the Rolling Plains while approximately 33 percent of all row crop acreage in the Black Prairie is farmed with horse-drawn equipment and 67 percent with tractor drawn equipment. Grain sorghum is an exception in the Black Prairie as most of this acreage is farmed with horse-drawn equipment. In the Northeast Sandy Lands where fields are small and irregular in shape, one-row and part row horse-drawn equipment is used almost exclusively.<sup>11/</sup> Only in the Black Prairie can a fair comparison be made of man's relative efficiency when working with tractor as contrasted to horse-drawn equipment.

Differences in the amount of annual rainfall further increase labor requirements in cotton production as you go from West to East in Texas. In the High Plains where annual rainfall averages about 20 inches, cotton is usually cultivated 3 to 4 times and little hoeing or chopping is done. Conditions and practices are comparable in the Rolling Plains except that in this area about three-fourth of the cotton customarily is chopped or spaced in the row. Rainfall in the Black Prairie averages 35 inches annually and here cotton is cultivated from 4 to 6 times and hoed twice in addition to being chopped. In the Northeast Sandy Lands where the annual rainfall averages 45 inches, cotton is given 6 to 8 cultivations, is chopped or spaced and receives 2 to 3 additional hoonings. More time is spent on each hoeing in this than in other areas. Harvesting requires about a third less labor per acre in the two Plains areas than in the two areas in the eastern part of the State. Practically all cotton is picked in the Black Prairie and Northeast Sandy Land areas while 85 to 100 per cent is snapped in the High and Rolling Plains areas. <sup>12/</sup>

<sup>11/</sup> Percentage of land operated by different methods taken from "Labor and Power Requirements for Crop and Livestock Production in Texas" Progress Report No. 838 Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

<sup>12/</sup> The foregoing discussion of effect of climate and practices on labor required in cotton production was adapted from "Gearing Texas Cotton to War Needs". Texas Agricultural Experiment Station Bulletin No. 624, November 1942.

Table 1 - Labor requirements in the production of cotton, corn and grain sorghum in four major types of farming areas by common types of operating equipment 1/

Crop and type of operating equipment	High Plains		Black Prairie		Northeast Sandy Lands Area	
	Cotton Area	Flains Area	Acre	Man hours	Man hours	Man hours
Man hours:Man hours:Man hours:Man hours:Man hours:Man hours						
per acre :per bale :per acre :per bale :per acre :per bale						
:or bushel:or bushel:or bushel:or bushel:or bushel:or bushel						
<u>COTTON</u>						
Normal yield	185 pounds	135 pounds	170 pounds	150 pounds	150 pounds	*
4 row tractor	19.1	51.6	*	*	*	*
2 row tractor	20.3	54.9	25.0	92.6	39.5	116.2
1 row and part	*	*	*	*	*	*
row horse	*	*	*	*	49.0	144.1
Area average	19.9	53.3	25.0	92.6	42.6	125.3
<u>CORN</u>						
Normal yield	12 bushels	12 bushels	20 bushels	12 bushels	12 bushels	*
4 row tractor	5.0	.42	*	*	*	*
2 row tractor	5.8	.48	5.9	.74	10.3	.52
1 row and part	*	*	*	*	*	*
row horse	*	*	*	*	17.6	.88
Area average	5.6	.47	8.9	.74	12.0	.64
<u>GRAIN SORGHUM</u>						
Normal yield	20 bushels	15 bushels	20 bushels	20 bushels	20 bushels	20 bushels
4 row tractor	3.9	.20	*	*	*	2/
2 row tractor	4.9	.24	9.8	.65	*	—
1 row horse	*	*	*	*	*	—
Area average	4.6	.23	9.8	.65	1.20	—

1/ Derived from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838 Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

2/ Grain sorghum not important crop in this area.

Type of equipment not commonly used in designated area.

These differences in mechanization, rainfall and farming practices are reflected mostly in the amount of pre-harvest labor required. The amount of labor required previous to harvest is particularly significant since this largely determines the acreage of cotton that a family can handle when seasonal labor is used in harvesting.

"A family using one set of two-row tractor equipment in the High Plains can handle almost 200 acres of cotton, which at average yields will produce 75 bales. Comparable figures for the other three areas are: The Rolling Plains, 130 acres and 37 bales; the Black Prairie, 44 acres and 16 bales; and the Northeast Sandy Lands, 28 acres and 9 bales. These differences further reflect themselves in net farm incomes. At the above scale of operations, and with cotton prices at present levels (1942), the average income in the High Plains would be seven to eight times the average income in Northeast Texas, about twice the average income in the Rolling Plains, and three to four times the average income in the Black Prairie". 13/

The net effect of these differences in productivity of labor plus that of the number of people in relation to land resources and resulting scale of farming operation on farm income are illustrated in Figures 1 and 2. These census data relate to farm production during 1939 and April 1940 farm population. Value of production has gone up and farm population down since 1940 at varying rates in different parts of the State. Consequently the level of income per capita of farm population has increased and the relationships indicated here have been altered somewhat. Similarly the number of low income farms has been reduced by combination and abandonment. Recent studies indicate, however, that these desirable adjustments between people and land resources have been only slightly more pronounced in areas of low productivity than in higher income areas.

Why concern ourselves with income and level of living of farm people during a war emergency? Because income is merely production multiplied by prices; prices roughly reflect national wartime needs for the respective products; so income per worker measures the efficiency of labor in its present use in meeting national needs. These considerations will assume even greater importance in the longer range post-war period when farm prices resume a more normal relationship to those of manufactured goods. In the solution to the problem of inadequate farm family income also lies the answer to some of the inevitable post-war problems of health, medical care, education, nutrition, tenure security, soil conservation, etc. Now is admittedly not the time to press for widespread social and economic reforms as such, but we may well take advantage of any opportunity to effect adjustments netting long term social gains where they also represent a step toward hastening the day of victory. Any move in the direction of increased efficiency in the use of land, labor, and capital in producing agricultural products in the quantity needed enhances agriculture's chances for securing its fair share of the national income after the war. More important, such adjustments contribute to the balanced agricultural-industrial economy so essential to maintaining the national income at a sufficiently high level that "agriculture's fair share" will allow farm people to enjoy a high material as well as spiritual level of living.

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13/ "Gearing Texas Cotton to War Needs". Texas Agricultural Experiment Station Bulletin No. 624, November 1942.

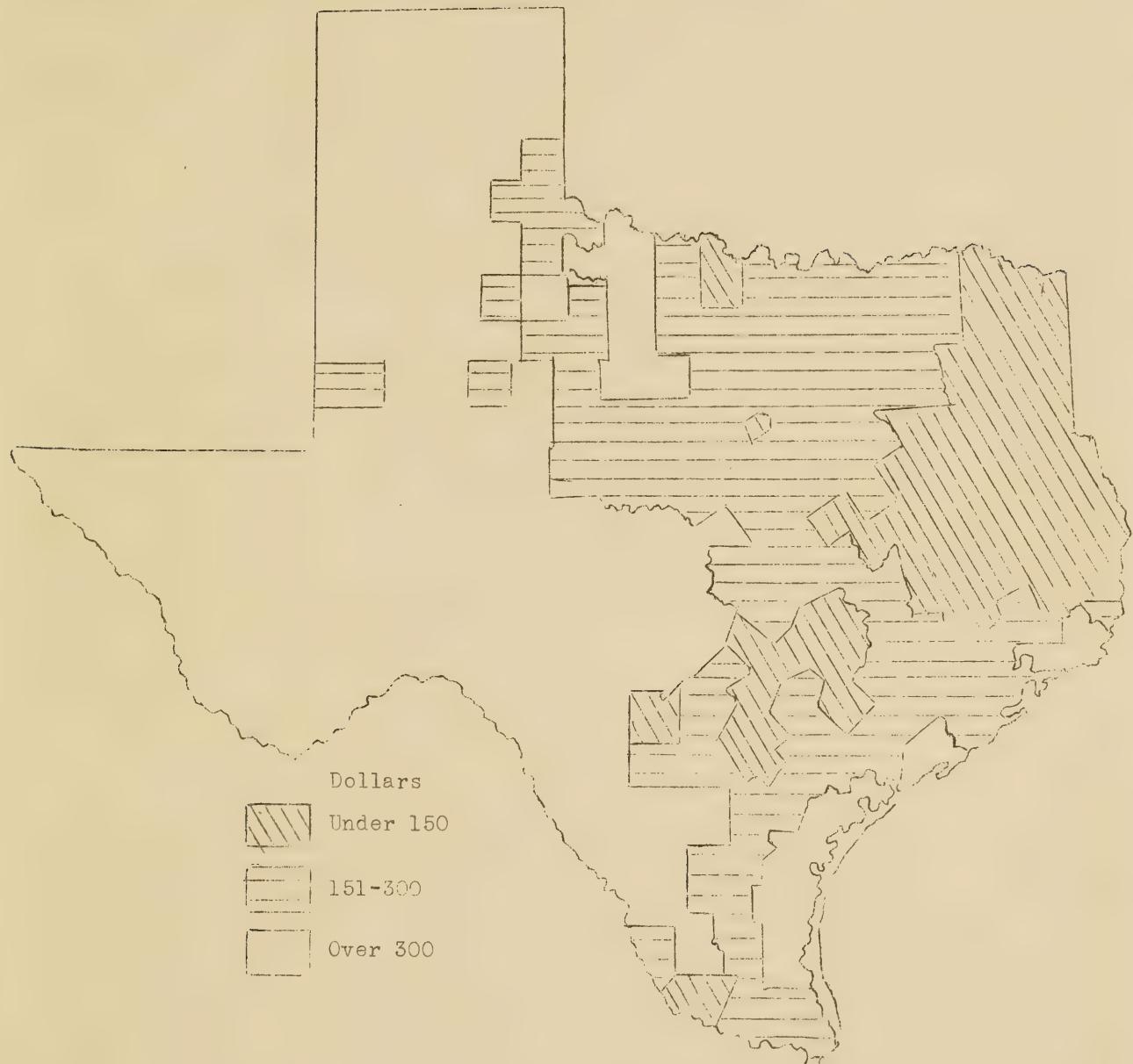


Figure 1. Gross Value of the Products Sold, Traded and Used, 1939  
Per Capita of Rural Farm Population

Source: 1940 Census of Agriculture and Population

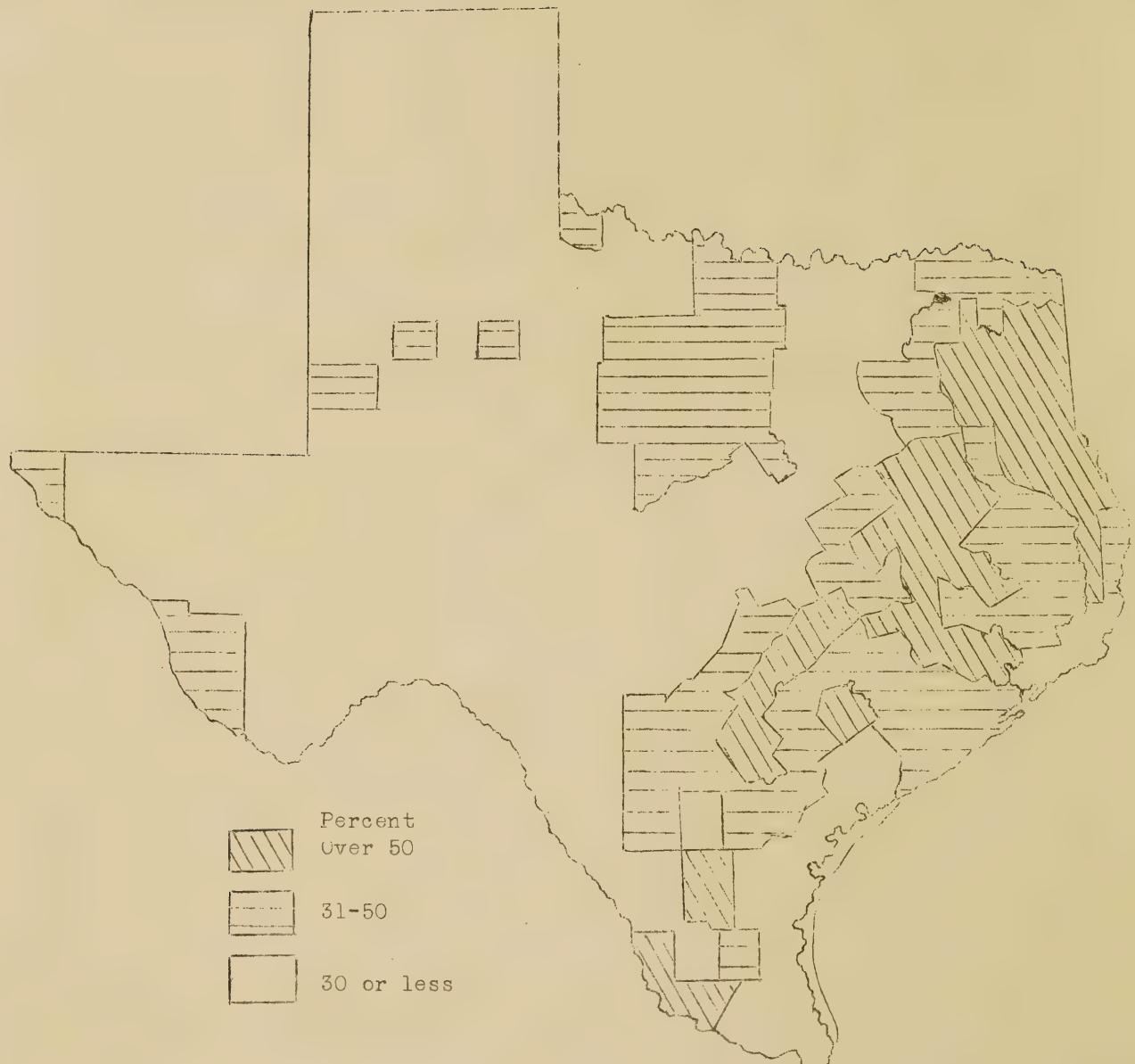


Figure 2. Subsistence Farms 1940 <sup>1/</sup>  
as percent of all farms

Source: 1940 Census of Agriculture

<sup>1/</sup> Farms reporting gross value of production less than \$600 whose operators worked less than 100 days off their farms for pay during 1939.

### The 1943 Farm Labor Situation by Areas

In the succeeding analysis of the 1943 demand and on-farm labor supply situation in each of four major type of farming areas of Texas, discussion will be limited largely to clarifying and suggesting uses of the several tables and charts and to pointing out some of the principal implications of the relationships. Specific recommendations for coping with the apparent labor problems in these areas are purposely avoided for they require far more intimate knowledge of local conditions and individual farm situations than the authors have at hand. This report pictures the situations indicated by statistical averages based on certain stated assumptions. The test of these indications and their application to alleviating existing and impending farm labor problems and effecting other agricultural adjustments will come with the use of this material by the Extension Service and various county representatives of the Department of Agriculture working with farm people.

It should be remembered that calculated labor requirements for the farm areas and each size of farm group relate to the number of workers needed in crop and livestock production when using the type of power and equipment most common to the particular area under consideration. These data therefore relate only to the adequacy of the present on-farm labor supply to meet current demands and provide no insight to how productively labor is employed under these circumstances.

Since Area 15 and Area 3 represent the "low" and "high" respectively as far as mechanization and efficiency in use of labor are concerned, the succeeding discussion of individual areas will proceed from Area 15 directly to Area 3. Conditions in Area 4 and Area 14 are largely modifications of these two extremes and will be discussed subsequently.

#### Northeast Sand Lands Area (15)

This area comprises 23 counties in the extreme northeastern part of the State and the farming methods used in producing the basic crop, cotton, are similar to those employed throughout the upland portions of the Cotton Belt to the east. For general purposes, conditions here may be taken as representative of those obtaining in the broad Forested Coastal Plains sub-region which includes a large part of northern Louisiana and southern Arkansas in addition to East Texas.

"Farming in this area (Area 15) is characterized by small farms, small irregular shaped fields, small, simple tools, and the use of comparatively large amounts of commercial fertilizer as compared with other farming areas in the state. It is further characterized by a basic cropping system of cotton and corn that is supplemented in various parts of the area with a wide variety of special crops, mainly vegetables. Other crops that are grown rather generally throughout the area are cowpeas, sorghums, peanuts, sweet potatoes and watermelons . . . Livestock are kept primarily for home consumption on the great majority of farms in this area". 14/

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14/ Bonnen, C. A. and Thibodeaux, B. H. "A Description of the Agriculture and Type-of-Farming Areas in Texas"; Texas Agricultural Experiment Station Bulletin No. 544 June, 1937

These physical characteristics, farming methods, and an average annual rainfall of 40-45 inches combine to make this the highest labor cost cotton and corn producing area of the State. It will be recalled from Table 1 and the accompanying discussion of productivity of labor under methods of use common to the various areas that upward of 250 hours of man labor are required to produce a bale of cotton in Area 15 as compared to 125 in the Black Prairie, less than 100 in the Rolling Plains and about 55 hours in the highly mechanized High Plains Cotton Area. The large amount of hand labor required prior to harvest limits the cotton acreage which a family using the row and part row equipment common to this area could handle to about 28 acres which with normal yields would produce about 9 bales. <sup>15/</sup> Under-employment was heavy in Area 15 before the war and income per capita and per farm low (Figures 1 and 2).

The succeeding analysis of this area is based on sample data for 463 representative farms in Cass and Smith counties summarized by four major cropland size groups. These groups with the percentage each represents of the estimated 52,100 operated farms in this area are: Group I; 0-30 acres cropland, 30 percent; Group II; 31-50 acres cropland, 25 percent; Group III; 51-70 acres cropland, 20 percent; and Group IV; over 70 acres cropland, 25 per cent.

#### Supply and Demand Situation for the Area

The primary farm labor problem in this area is still one of finding gainful employment for all available workers throughout the year. Marked seasonal unemployment is characteristic of any area like this in which highly seasonal labor requirements are met largely with resident labor. Although the draft and war production have made inroads into the substantial pre-war labor surplus of the Sandy Lands, present data indicate that labor on farms in this area in 1943 was only partially utilized most of the year (Chart 1). Only in the spring months, March through June, is the regular labor force fully occupied. Preharvest work on cotton, corn, sweet potatoes and the harvesting of tomatoes require more labor during these four months than is available from the regular labor supply. Women and children can and do perform considerable of the hand labor required in crop production in this area, so there is a sizeable on-farm reserve which can be expected to do farm work when needed. Only in May would additional seasonal workers need to be hired if the feasible on-farm supply could be fully mobilized. Even though the 13,700 additional workers needed from non-farm sources (Table 2) is, according to the present assumptions, a minimum for the entire area, this seasonal demand should not be a problem since the numerous small towns and villages throughout this area ordinarily furnish a large number of seasonal farm hands. Even with the heavy hand labor requirements of cotton and peanut harvest during September and October, the regular labor supply is more than adequate in the area as a whole.

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<sup>15/</sup> See "Gearing Texas Cotton to War Needs"; Texas Agricultural Experiment Station Bulletin No. 624, November, 1942

Chart 1. Labor required and supply available on farms in Area 15,  
Northeast Sandy Lands, 1943. Area total number of workers  
in man-month equivalents

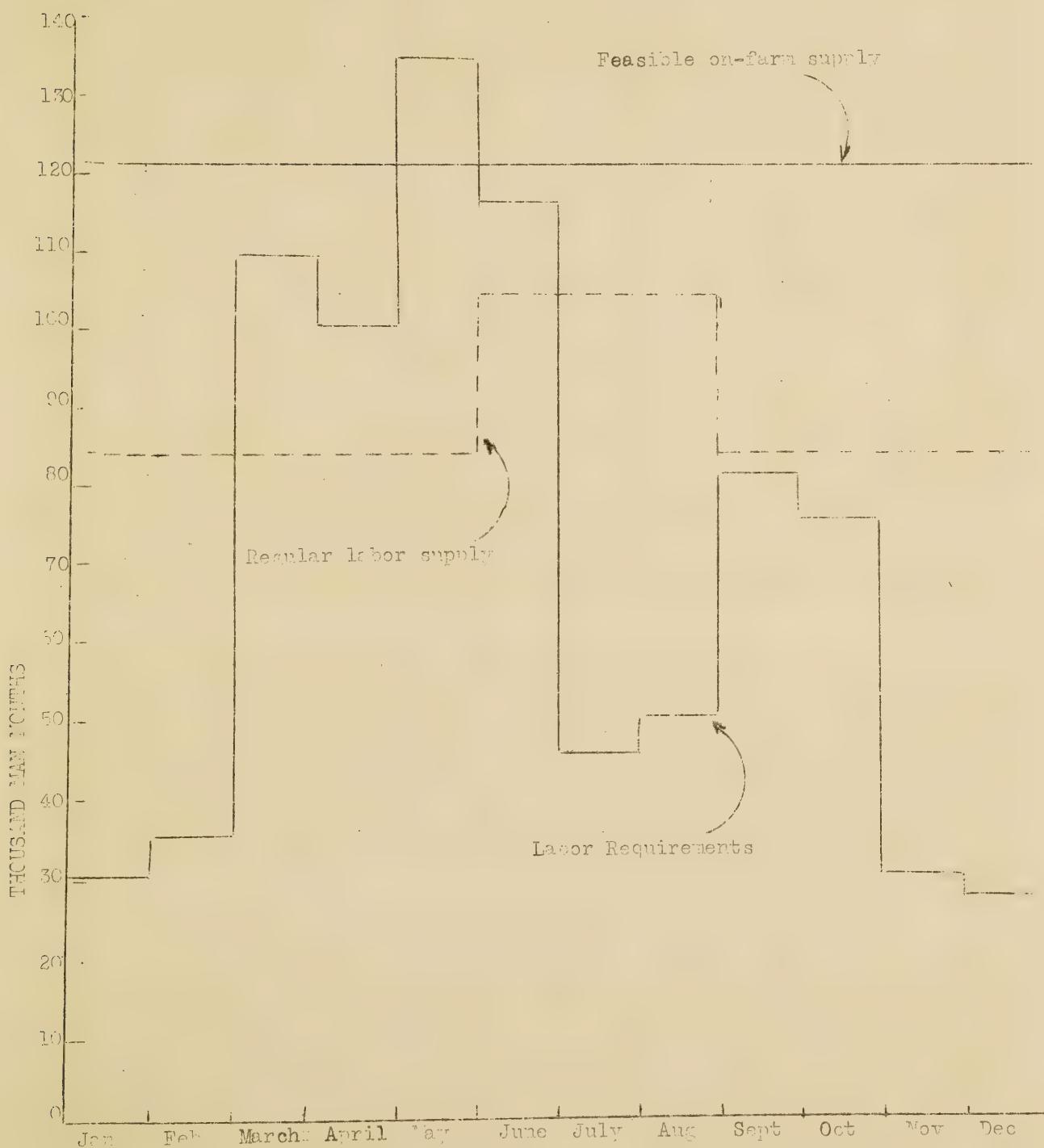


Table 2 - Labor utilization in Area 15, Northeast Sandy Lands, 1943

## Area Total

Month	Total labor requirements			Workers available for other employment			Additional hired workers needed	
	Total man months	As percent of supply from regular labor supply	Feasible on-farm supply	Number	Percent	Number	1/	2/
	Number	Percent	Percent	Number	Number	Number		
	:	:	:	:	:	:	:	:
January	30,500	36	25	53,500			0	
February	35,500	42	29	48,500			0	
March	109,700	131	91	0			0	
April	100,700	120	83	0			0	
May	134,900	161	111	0			13,700	
June	116,600	111	96	0			0	
July	45,500	43	38	59,300			0	
August	50,200	48	41	54,600			0	
September	81,400	97	67	2,600			0	
October	75,700	90	62	8,300			0	
November	30,100	36	25	53,900			0	
December	27,600	33	23	56,400			0	

1/ Excess of regular labor supply over requirements in man equivalents

2/ Excess of requirements over feasible on-farm supply in man equivalents.

Area 15 appears to be a potential source of supply for both seasonal and year-round workers even if the 1943 level of production in the area is maintained. The number of seasonal workers which might be recruited from this area would of course depend largely on the season, location of the prospective employment and provisions for transportation there and back. Unfortunately the longest period of marked under employment occurs in the winter months at which time demands for seasonal agricultural workers are light the country over. However, some additions to the short harvest labor supply in the rice areas of Texas and Louisiana as well as the early cotton areas might be found here to the advantage of local farm people.

Under-employment among adult males in the regular labor force in each of six months amounted to the equivalent of some 50,000 workers. In September and October, 3,000 to 8,000 males are unemployed even if none of the women and children in the reserve labor supply picked cotton. But, calculated full employment is never possible for there must always be a reserve for a safety margin. Furthermore, such an overall area comparison must necessarily assume complete fluidity of labor within its boundaries and so understates the number of workers needed as well as the amount of recruitment and placement necessary to getting workers where they are needed when they are needed. Such comparisons are none-the-less suggestive of recruitment possibilities and additional seasonal labor needs.

A closer approximation of the true situation within an area as regards the amount of intra-area recruitment and placement necessary to meeting labor needs may be made by considering the excess of demand over the regular and feasible supply on the area total number of farms in each of the four major size groups in the manner of Table 3. These results were obtained by multiplying the number of additional workers needed on the average farm in each size group as calculated from the sample by the estimated area total number of farms in that size group. For the sake of simplicity, it was assumed here as in other instances throughout this report that the resident reserve supply would be drawn upon first to meet requirements over and above the capacity of the regular labor supply. Only those periods in which 1943 requirements exceeded the regular labor supply are shown here together with the number of workers needed in each period from the on-farm reserve and non-farm sources. The assumption of fluidity is now reduced to farms in the same size class and is subject to less error since "supply" farms have been largely separated from "demand" units. On this basis the May labor problem, for example, assumes different proportions. Some 42,000 persons living on farms but not a part of the regular labor supply would need to be brought into the active labor force during May together with an additional 25,700 hired workers from Group I farms and non-farm sources. Comparisons of this kind help to define not only the nature and magnitude of the problem of mobilizing both farm and non-farm resources within an area to meet seasonal demands, but also the effect which recruitment of workers for other areas would have on the labor problems of farmers with larger scale operation. The usual conflict of operations presents a major difficulty in supplying the seasonal hired labor needs on the large farms from under-employed labor on very small farms within the area. All farmers have some work to do on their own farm and usually prefer to tend their own crops before seeking employment on another farm. Similarly an operator hiring seasonal workers wants them immediately as the need arises. Since the number of such workers employed to chop or pick cotton does not affect the operator's hired labor expense, he will usually try to hire as many as he can use effectively and get the work done as quickly as possible. This shortening of the period of possible employment makes full use of under-employed workers within an area most difficult.

#### Supply and Demand Situation on Farms of Different Sizes

But we have seen only a part of the demand side of the picture as it relates to farms of different sizes. Charts 2 and 3 portray graphically the relationship between the labor requirements (Table 4) and the two levels of labor supply (Table 5) on the average farm in each of the designated cropland size groups; hence, indicate for each month the extent of under-employment and the amount of additional hired labor (if any) needed. These relationships are expressed quantitatively in Table 6.

The seasonal distribution of labor requirements for all four size groups follows precisely the same irregular pattern as did that for the area average of all farms. The smallest farms have relatively more of their cropland in corn and sweet potatoes than do the larger size units. (Table 7). In all other respects the crop and livestock organization on the smaller farms is very similar to the average of other groups. The supply of available labor in relation to the demand differs widely between farms of different sizes. These differences are closely related to the adequacy of a given size farm in this area to utilize fully the labor resources of a family and would be even more pronounced if those farms worked partially by sharecroppers were excluded. Farms in Area 15 can be

Table 3 - Mobilization of labor necessary to meeting requirements of farms  
in designated cropland size groups, Area 15, Northeast Sandy Lands, 1943

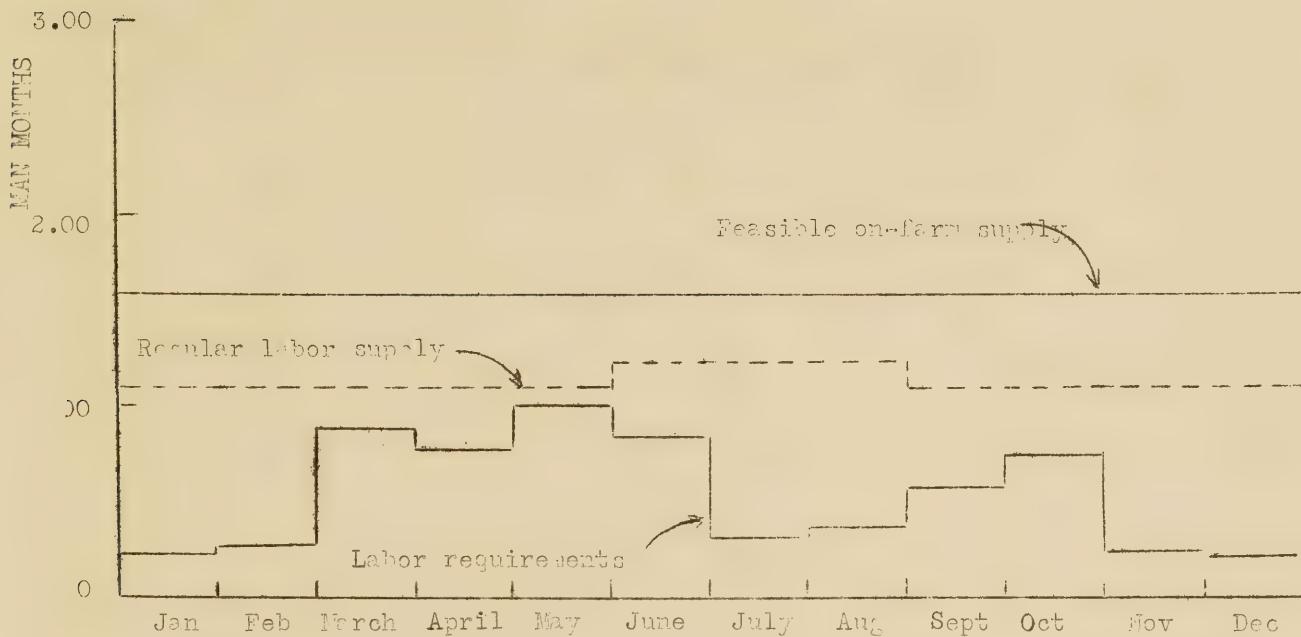
Area total

Cropland size group	Workers needed from reserve supply 1/				Additional seasonal hired workers needed 2/	
	Periods of need	Man equivalents		Persons	Number of man equivalents	
		Number	Percent of reserve	Number		
Group I (0-30 acres)	None	None	0	None	None	
Group II (31-50 acres)	March	290	4	470	None	
	May	5,100	78	8,260	None	
Group III (51-70 acres)	March	5,510	68	8,980	None	
	April	4,500	56	7,300	None	
	May	8,100	100	13,200	4,400	
	June	4,390	100	7,130	1,000	
	September	2,360	29	3,840	None	
	October	1,460	18	2,380	None	
Group IV (over 70 acre)	March	12,840	100	20,870	8,000	
	April	12,840	100	20,870	4,300	
	May	12,840	100	20,870	21,300	
	June	8,420	100	13,680	12,100	
	September	9,560	74	15,530	None	
	October	7,420	58	12,060	None	

1/ Excess of requirements over "regular labor supply". Where additional hired labor is needed complete utilization of reserve supply is assumed. Since "reserve" is composed of women and school children, ratio of 60 percent was used as a conversion factor.

2/ After fully utilizing "feasible on-farm supply".

GROUP I (0-30 ACRES CROPLAND)  
Includes about 15,620 farms or 30% of area total.



GROUP II (31-50 ACRES CROPLAND)  
Includes about 13,030 farms or 25% of area total

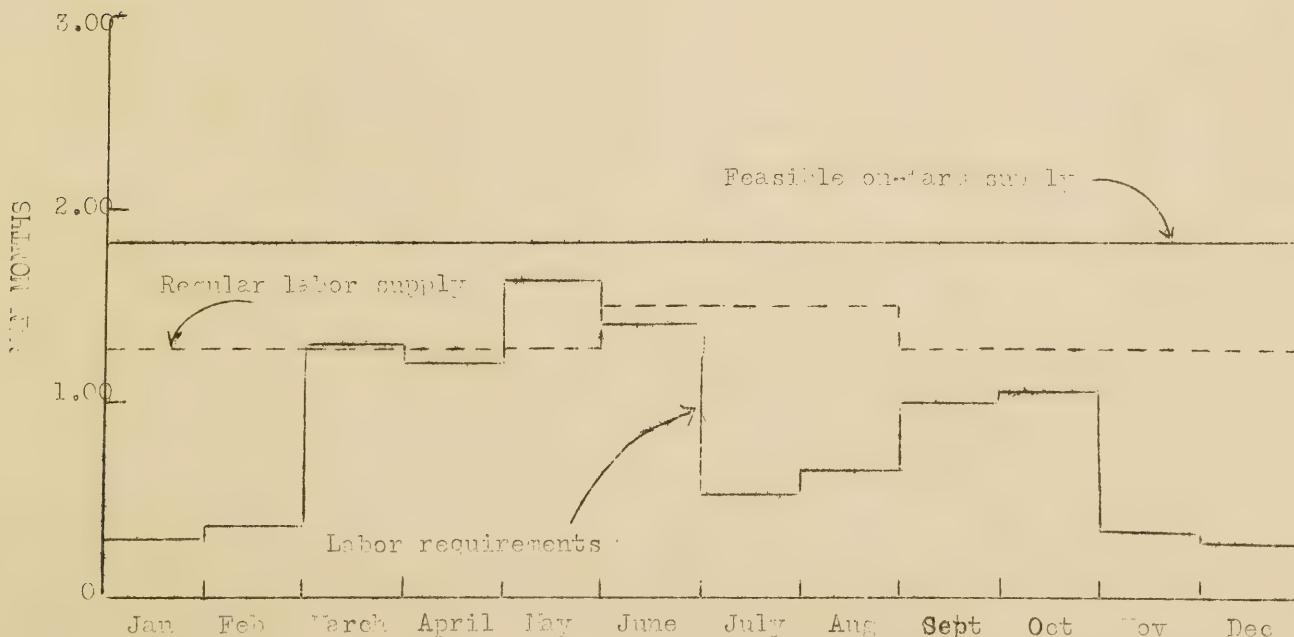
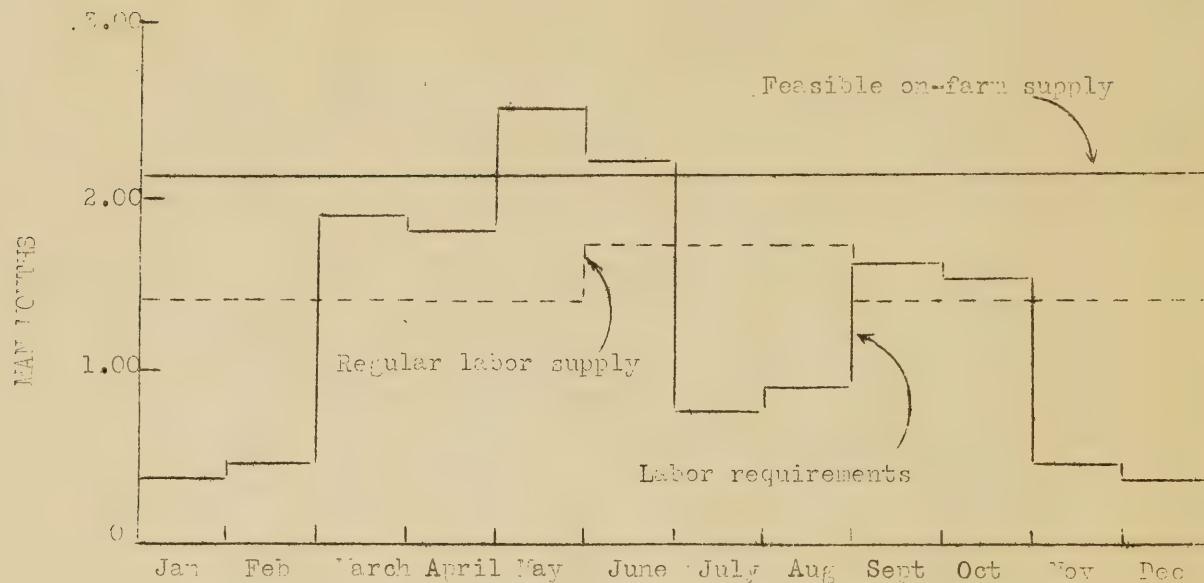


Chart 2. - Labor required and supply available on farms in designated cropland size groups in Area 15, Northeast Sandy Lands, 1943.  
Average number of workers per farm in man-month equivalents.

GROUP III (51-70 ACRES CROPLAND)  
Includes about 10,420 farms or 20% of total



GROUP IV ( OVER 70 ACRES CROPLAND)  
Includes about 13,030 farms or 25% of total

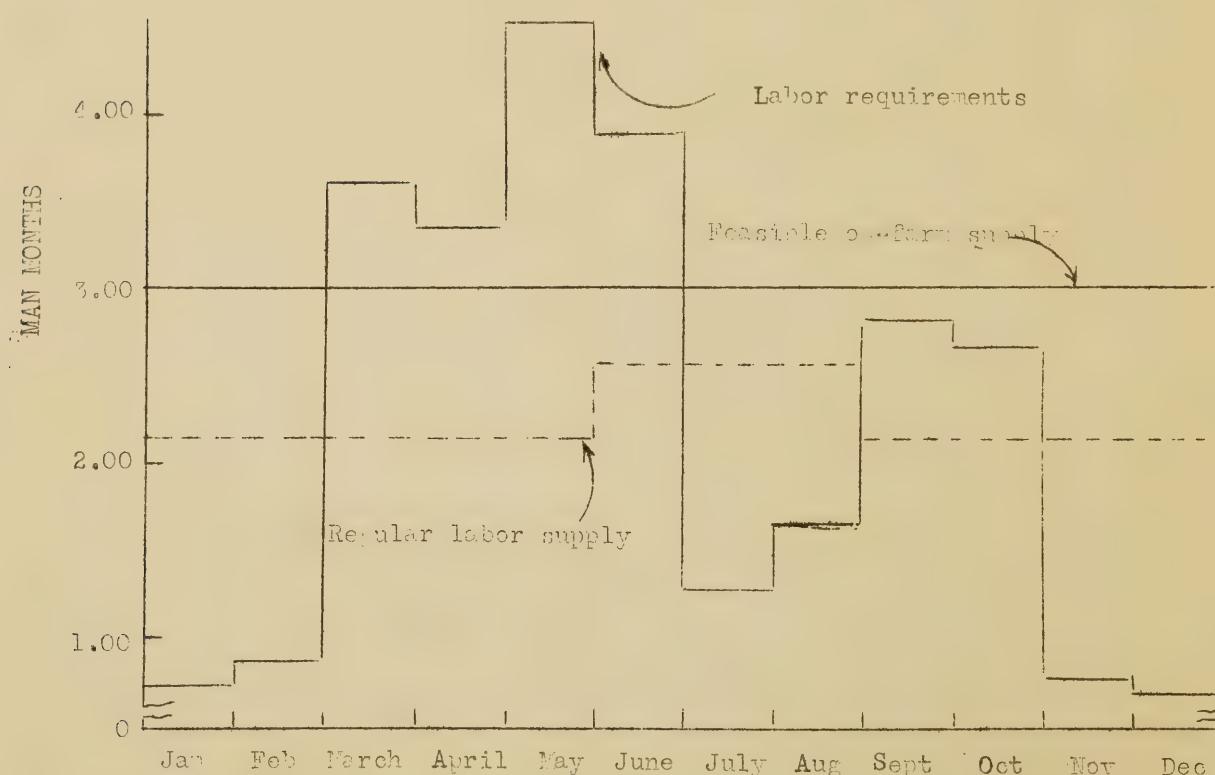


Chart 3 - Labor required and supply available on farms in designated cropland size groups in Area 15, Northeast Sandy Lands, 1943, Average number of workers per farm in man month equivalents.

Table 4 - Average labor requirements of farms in designated cropland size groups, Area 15, Northeast Sandy Lands, 1943 1/

Man months - average per farm

Cropland size groups	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	12 month total
Group I (0-30 acres)													
Crops	.01	.07	.70	.60	.86	.69	.16	.21	.42	.58	.04	.01	4.35
Livestock	.21	.20	.18	.17	.15	.15	.15	.15	.16	.19	.20	.21	2.06
Total	.22	.27	.88	.77	1.01	.84	.31	.36	.57	.74	.23	.21	6.41
Group II (31-50 acres)													
Crops	.02	.08	1.04	.96	1.41	1.17	.29	.43	.78	.84	.08	.01	7.11
Livestock	.23	.27	.25	.23	.21	.21	.22	.21	.21	.25	.28	.28	2.83
Total	.30	.35	1.29	1.19	1.62	1.38	.51	.64	.99	1.05	.33	.29	9.94
Group III (51-70 acres)													
Crops	.02	.11	1.58	1.51	2.25	1.95	.48	.64	1.37	1.27	.14	.02	11.34
Livestock	.36	.35	.32	.30	.27	.27	.29	.27	.26	.27	.32	.35	3.63
Total	.38	.46	1.90	1.81	2.52	2.22	.77	.91	1.63	1.54	.46	.37	14.97
Group IV (over 70 acres)													
Crops	.06	.21	3.02	2.80	4.05	3.42	.76	1.17	2.35	2.18	.17	.04	20.23
Livestock	.68	.65	.59	.55	.49	.48	.51	.48	.47	.49	.60	.65	6.64
Total	.74	.86	3.61	3.35	4.54	3.90	1.27	1.65	2.82	2.67	.77	.69	26.87

1/ Per unit labor requirements from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838, Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

Table 5 - Estimated labor supply on farms in designated cropland size groups, Area 15, Northeast Sandy Lands, 1943

Man equivalents - average per farm

Cropland size group	Regular labor supply			Feasible on-farm supply		
	Male	Female	Total	Male	Female	Total
	Sept. to : May incl:	June to : Aug. incl:	Sept. to : May incl:	Sept. to : May incl:	June to : Aug. incl:	Male:Female:Total
	:	:	:	:	:	:
Group I (0-30)	.90	1.01	.20	.22	1.10	1.23 : 1.01 : .57 : 1.58
Group II (31-50)	1.06	1.27	.21	.22	1.27	1.49 : 1.27 : .55 : 1.82
Group III (51-70)	1.19	1.50	.22	.24	1.41	1.74 : 1.50 : .63 : 2.12
Group IV (over 70)	1.87	2.26	.28	.30	2.15	2.56 : 2.26 : .79 : 3.05

Table 6 - Labor utilization on farms in designated cropland size groups, Area 15, Northeast Sandy Lands, 1943

Month	Labor requirements as percent of specified supply						
	Group I (0-30)	Group II (31-50)	Group III (51-70)	Group IV (over 70)	Regular	Feasible	Regular
	labor	on-farm	labor	on-farm	labor	on-farm	labor
	supply	supply	supply	supply	supply	supply	supply
January	20	14	24	16	27	18	34
February	25	17	28	19	33	22	40
March	80	56	102	71	134	89	168
April	70	49	94	65	128	85	156
May	91	64	128	89	179	118	211
June	56	53	92	76	128	104	152
July	21	20	34	28	44	36	50
August	24	23	43	35	52	43	64
September	52	36	78	54	115	77	131
October	67	47	83	58	109	72	124
November	21	15	26	18	33	22	36
December	19	13	23	16	26	17	32

Table 7 - Average organization of farms in designated cropland size groups, Area 15, Northeast Sandy Lands, 1943

Average per farm

	: : : : :	: Unit	: Group I	: Group II	: Group III	: Group IV
	: Acres	: (0-30)	: (31-50)	: (51-70)	: (over 70)	
Farms in sample	: No.	: 138	: 118	: 91	: 116	
Total cropland 1/	: Acres	: 19.3	: 39.0	: 59.3	: 122.7	
Corn	: Acres	: 6.4	: 9.3	: 13.7	: 27.4	
Cotton	: "	: 4.8	: 8.8	: 15.7	: 27.2	
Grain sorghum	: "	: .4	: .6	: .8	: 1.9	
Forage sorghum	: "	: .6	: .9	: 1.2	: 2.9	
Peanuts	: "	: 1.2	: 2.3	: 4.3	: 4.2	
Sweet potatoes	: "	: 1.0	: 1.1	: 1.3	: 2.3	
Cowpeas	: "	: 1.4	: 3.3	: 3.3	: 7.2	
Other crops	: "	: .5	: 1.4	: 1.1	: 3.7	
Land used for crops 2/	: "	: 16.3	: 27.7	: 41.4	: 76.8	
As percent of total cropland	: Percent	: 84.7	: 71.0	: 70.0	: 62.6	
Milk cows	: Percent	: 1.9	: 2.5	: 3.2	: 5.5	
Other cattle	: No.	: 1.2	: 2.1	: 2.7	: 9.8	
Brood sows	: "	: .4	: .5	: .7	: 1.1	
Laying hens	: "	: 32.9	: 45.9	: 45.8	: 68.1	
Horses & mules	: "	: 1.4	: 1.9	: 2.7	: 4.7	
	:	:	:	:	:	
	:	:	:	:	:	

1/ "Cropland means farm land which in 1942 was tilled or was in regular rotation," Texas Handbook 1943 Agricultural Conservation Program AAA. Southern Division, March, 1943.

2/ Total of listed crops.

Table 8 - Composition of the feasible on-farm labor supply by designated cropland size groups, Area 15, Northeast Sandy Lands, 1943

Percent of group total supply

Characteristic	: Group I	: Group II	: Group III	: Group IV
	: (0-30)	: (31-50)	: (51-70)	: (over 70)
Sex of worker	: 100.0	: 100.0	: 100.0	: 100.0
Male	: 63.9	: 69.8	: 70.3	: 74.0
Female	: 36.1	: 30.2	: 29.7	: 26.0
Age of worker	: 100.0	: 100.0	: 100.0	: 100.0
10 - 13 years	: 6.1	: 6.2	: 8.3	: 9.8
14 - 19 years	: 16.5	: 21.5	: 22.1	: 18.0
20 - 39 years	: 34.5	: 30.9	: 21.6	: 32.6
40 - 54 years	: 32.6	: 28.3	: 37.8	: 29.9
55 - 64 years	: 8.5	: 11.6	: 9.3	: 8.7
65 years and over	: 1.8	: 1.5	: .9	: 1.0
Type of worker	: 100.0	: 100.0	: 100.0	: 100.0
Family	: 94.2	: 92.5	: 87.1	: 63.6
Hired	: 2.5	: 2.7	: 4.1	: 8.4
Sharecropper	: 3.3	: 4.8	: 8.8	: 28.0
	:	:	:	:
	:	:	:	:

roughly divided into two classes of equal number on the basis of their size and the nature of their labor problem: those with less than 50 acres cropland - chronic under-employment; those with more than 50 acres cropland - seasonal demands for workers in addition to the on-farm supply.

It will be noted from Chart 2 that the average Group I farm does not provide full employment for even the regular resident labor supply (essentially adult males) in any month. The regular labor force on the average Group II farm is fairly fully utilized March to June inclusive but under-employed during the other eight months. Farms in both these groups represent a potential source of both year-round and seasonal workers for larger farms in this area or elsewhere. A net reduction in the regular labor force on Group II farms could be offset by utilizing more fully the reserve supply during the spring months. How many more people could be drawn off these small farms without reducing the short run production in this area is hard to say. Some improvement in utilization of this available labor would seem feasible through combination of inadequate units into farms which would more fully occupy the time of the operator and his family. Since some 16,000 families are now living in this area on farms with less than 30 acres of cropland and another 13,000 on farms of 30 to 50 acres cropland, there is a substantial pool of potential workers now under-employed in the Northeast Sandy Lands.

It is frequently assumed that practically all the people living on these small farms are either too old or otherwise incapacitated for full time work. The present data do not indicate health status or debility but it will be noted from Table 8 that a goodly number of men 20-54 years of age are included among these residents. Upward of three-fourth the farms under 50 acres cropland had one adult male in their labor supply. All of the farms in Group I averaged one man equivalent from males all ages while those in Group II averaged 1.25 man equivalents. As would be expected, practically all of the persons on these small farms were listed as family members. The few sharecroppers and hired workers were apparently unusual cases or are misclassified. Age, sex, and type of workers (family, hired, or sharecropper) have important bearing on their availability for work elsewhere and careful advance consideration of these characteristics will facilitate any recruitment effort.

The labor situation on Group III and Group IV farms is an exaggeration of that obtaining on the smaller units. Labor requirements on the average farm in both of these groups keep their regular labor force fully occupied except for the six months in which labor requirements are very low. It is these two groups of farms which require attention and assistance in meeting their seasonal labor needs. Not only is practically full mobilization of the reserve supply needed during the four spring months and also in September and October on the larger farms, but we have seen from earlier discussion (Table 3) that a considerable number of additional hired laborers from other farms and non-farm sources would also be required.

It is frequently assumed that underemployed workers on small farms become seasonal wage hands on the larger farms during periods of peak labor demand. Table 9 which summarizes the off-farm employment of persons on farms of different sizes fails to bear this out. Less than two-fifths of those farms in the smallest size group reported any persons working off the home farm. In fact there is little apparent difference between groups with respect to off-farm employment. The Farm Manpower Inventory record of work off the home farm did not specify whether it was farm or non-farm. Indications are, however, that

Table 9 - Work off farm during 1942 by persons on farms in designated cropland size groups, area 15, Northeast Sandy Lands.

Item	Group I (0-30)		Group II (31-50)		Group III (51-70)		Group IV (over 70)	
	M	F	M	F	M	F	M	F
Farms reporting work off farm in 1942 as percent of all farms	: 38	: 12	: 27	: 4	: 27	: 7	: 29	: 10
Persons reporting working off farm as percent of all persons 10 years & over	: 36	: 12	: 22	: 4	: 20	: 7	: 14	: 6
Months worked off farm in 1942 average per all farms	: 2.6	: .9	: 1.9	: .5	: 2.2	: .7	: 2.8	: .6
Farms reporting work off farm:	: 1.2	: 1.4	: 1.4	: 1.2	: 1.4	: 1.7	: 1.4	: 1.2
Persons working off farm - average per farm	: 5.4	: 5.3	: 5.1	: 9.0	: 5.8	: 6.0	: 6.9	: 4.9
Months worked per person working off farm	: 6.7	: 7.4	: 6.9	: 10.8	: 7.8	: 10.0	: 9.8	: 6.2
Months worked per farm reporting	: 113	: 144	: 163	: 172				

Table 10 - Employment opportunities afforded by farms in designated cropland size groups, Area 15, Northeast Sandy Lands Area, 1943

Regular labor supply	Unit	Group			
		Group I (0-30)	Group II (31-50)	Group III (51-70)	Group IV over 70
Farm employment per worker 1/	Days	: 113	: 144	: 163	: 172
Percent of days available 2/	Percent	: 47.1	: 60.0	: 67.9	: 71.7
Off farm employment per worker	Days	: 58	: 35	: 38	: 29
Total employment per worker	Days	: 171	: 179	: 201	: 201
Percent of days available 3/	Percent	: 65.8	: 68.8	: 77.3	: 77.3

1/ As measured by labor requirements; i.e. total days per year which an average worker in the regular labor supply could find employment at farm work on the home farm.

2/ Assuming 240 days available for farm work.

3/ Assuming maximum of 260 days available for all kinds of work.

much of the off-farm employment during 1942 was for fairly long periods and so may be assumed to have been construction, war plant, or timber work. Of course there was less local demand for farm laborers in this area in 1942 than during the season past, but there is reason to doubt that under existing conditions very many small farm operators will find an important amount of supplemental employment on the larger farms in this area. If this is true, then recruitment of these underemployed workers for jobs elsewhere would not materially affect the supply available to the larger operators.

#### Employment per Worker per Year

By assuming that labor requirements per farm measure the amount of productive employment available on that farm, an estimate may be made of the number of days employment per worker per year afforded by the average farm in each size class (Table 10). These estimates are based on the average number of workers in the regular labor supply for it is only this segment which is available for full employment. The family income of workers on Group II, III and IV farms would be somewhat larger than this comparison indicates due to the availability of employment on the home farm for some of the other members of the family part of the year. In view of these limited employment opportunities coupled with the known low productivity of labor as it is used in this area, one could scarcely expect to find these farm people enjoying a high standard of living. The average worker on a Group I farm can expect to be gainfully employed, counting the work for hire off the home farm, about 1,700 hours a year or the equivalent of slightly under forty-three 40 hour weeks; on the two largest groups 2,000 hours or about fifty 40-hour weeks. The operator of an average Group I farm would have to earn about 88 cents an hour or \$8.80 per 10 hour day when working to support a \$1,500 annual income.

Some further insight into the income producing ability of farms of varying sizes and possibilities for revising the existing farming system to secure a more even distribution of labor requirements may be gained from Table 7. It is significant that the smallest farms in this area use their cropland much more intensively than do those in the largest size group. From the standpoint of complete utilization of cropland, the largest farms have the greatest potential capacity for expanding production within the existing farm organization, but any material increase in intensity of cropping would further complicate their problem of peak labor shortage. The small farms on the other hand have the greatest amount of unused manpower but less opportunity to utilize it productively on the presently constituted farm unit. Since "cropland" as defined by AAA includes plowable pasture, the decreasing intensity of cropping on the successively larger farms may represent the extent to which the operators of each respective sized unit can afford to substitute pasture and livestock for high labor consuming crop production. It does not seem unreasonable to expect that this indicates the direction of adjustment toward the best use of agricultural resources in this area under existing price-cost relationships and present conditions of labor scarcity and relatively high farm wage rates. Is it implied that a pasture economy makes more efficient use of labor and other factors of production than does crop farming in areas such as this where crop production is exceedingly expensive in terms of man labor required?

The primary labor problem, war and post-war, in the Northeast Sandy Lands and similar high cost cotton producing areas is one of increasing both the extent and effectiveness of agricultural employment. Any of the several approaches to a solution of this problem -- mechanization, extensification, diversification,

etc. -- will necessarily involve a complete reorganization of the present pattern of agriculture and require a substantial reduction in the farm population of the area. Unless some substantial improvement is made in the effectiveness of labor utilization in this area, there is small hope of finding a satisfactory and lasting solution to the more obvious resulting problems of ill health, poor housing, inadequate educational facilities and lack of economic security.

### High Plains Cotton Area (3)

The High Plains Cotton Area comprises most of 9 counties in the southern reaches of the High Plains. Cotton and grain sorghum are the principal crops, together accounting for more than 80 per cent of the crop acreage in this area. Livestock production has increased since the establishment of the Agricultural Adjustment Agency programs but still remains of secondary importance. 16/

"The physical features of the area are conducive to large-scale methods of production. The light rainfall (about 20 inches annually) makes weed control a minor problem while the smooth surface of the land permits the use of multi-row planting and cultivating machinery. The great majority of farmers use two-row equipment although in recent years the number of three- and four-row machines has greatly increased. The majority of farm families will operate from 160 to 320 acres of land, of which 80 to 85 per cent will be in cultivation and produce an average of not less than 25 to 30 bales of cotton per year. In addition, a surplus of either feed or livestock products or both may also be produced. A large proportion of the cotton harvesting is done with hired labor." 17/

The combination of efficient production methods and dependence upon outside hired labor for seasonal work on cotton makes this the longest labor-cost cotton producing area. It will be recalled from Table 1 that here only 55 hours of labor are required per bale of cotton, compared to 255 in East Texas.

Farms in this area are typically multiples of quarter sections of 160 acres, the most common sizes being 160 and 320 acres. About 80 per cent of the total land in farms, excluding ranches, is in cropland. Farms, therefore, fall into four major cropland size groups, two of which are common in the area, the other two the extremes. The groups used in this analysis with the estimated percentage each is of the total number farms in the area are as follows: Group I: 0-100 acres cropland; 11 percent; Group II: 101-180 acres cropland; 49 percent; Group III: 181-360 acres cropland - 31 percent; and Group IV: over 361 acres cropland - 9 percent. The following analysis is based on data for 436 representative farms in Dawson, Hockley, Lubbock and Lynn Counties.

### Supply and Demand Situation for the Area

The primary labor problem in this area is that of meeting two marked seasonal peaks -- July and October through January in which requirements

16/ See "Wartime Capacity of Texas Agriculture"; Bureau of Agricultural Economics and Texas Agricultural Experiment Station cooperating: October, 1943.

17/ Bonnen, C. A. and Thibodeaux, B. H.; "A Description of the Agriculture and Type of Farming Areas in Texas": Texas Agricultural Experiment Station, Bulletin No. 544, June, 1937.

greatly exceed the supply available on farms. (Chart 4). This problem is much less serious however than a November peak requirement more than double the on-farm labor supply would indicate (Table 11) for the "Plains" has long been a Mecca for the large body of migratory cotton pickers who annually follow the cotton harvest northward from extreme South Texas. Dependence upon these migrants for the bulk of cotton harvest is an important part of the method of operation which makes this the most efficient cotton producing area. The number of migratory workers making the long trek to the Plains has been reduced materially from its prewar level, but the supply has thus far proven adequate. In all, some 80,000 to 90,000 workers moved into the High and Rolling Plains areas in 1942 and 1943 for cotton and feed harvest. More widespread use of the mechanical cotton stripper, already proven practical in this area, would help relieve this harvest load. A two-row stripper type machine operated by two men will do the work of 12 men snapping cotton by hand. 18/

The July peak involves largely the work of chopping weeds missed in cultivation out of cotton and grain sorghums. Both the time required by this operation and the period in which it is performed are here based on usual or pre-war conditions and a relatively abundant supply of labor. This operation is probably spread out over a longer period at the present time which would materially reduce the number of workers needed. There is still a substantial number of persons in Lubbock and other towns in the area available for seasonal farm work. Cotton snapping rates have been very favorable compared to picking rates elsewhere and a worker can make substantially higher wages snapping in the Plains than picking cotton further downstate. This encourages the migrants to move into the Plains as soon as possible, frequently before they are needed and before they are finished in other areas. Large scale movement in advance of real need not only results in unemployment of workers but creates a difficult labor situation in other less favorably situated areas also depending on these same migrants to harvest a major share of their cotton. The real labor problem in this and other areas dependent upon migratory labor is that of assuring adequate transportation facilities to enable workers to follow the crop and an orderly routing of laborers to insure maximum use of a limited supply of workers.

On the other side of the picture, labor on farms in Area 3 is reasonably fully utilized; requirements representing 80 percent or more of the capacity of the regular labor supply in 8 months of the year. (Table 11). The assumptions on which these calculations of labor supply are based probably overestimate the amount of work done by operators and family workers especially on large farms. Not an unimportant part of the time of large scale operators is required by supervision which is not included in the present basis of calculating labor requirements. On the other hand many persons actually operating farms throughout this area live in towns and so the on-farm working force is understated to this extent. Although Column 4 of Table 11 indicates that 1,000 to 8,000 workers on farms are available for other employment during non-peak months, it is doubtful if recruitment for other agricultural areas would be fruitful or even desirable.

Such an overall area comparison must necessarily assume complete

18/ "Gearing Texas Cotton to War Needs"; Texas Agricultural Experiment Station Bulletin No. 624.

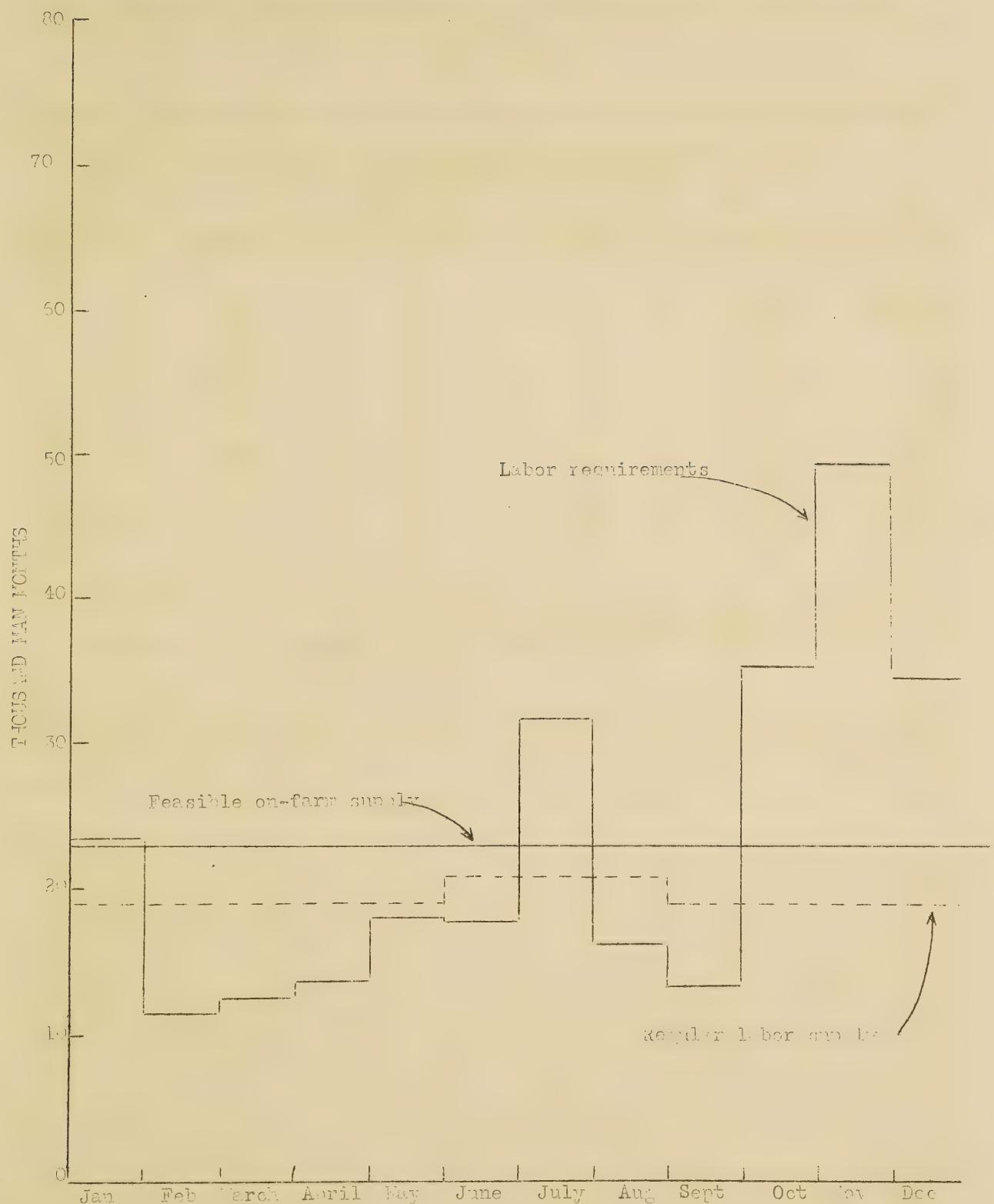


Chart 4.- Labor required and supply available on farms in area 3, High Plains Cotton Area. Area total number of workers in non-family equivalents.

Table 11 - Labor utilization in Area 3, the High Plains Cotton Area, 1943

## Area Total

Month	Total labor requirements			Workers available for other employment			Additional hired workers needed	
	Total man months	As percent of supply from regular labor	Feasible on-farm supply	Number	Percent	Number	1/	2/
	Number	Percent	Percent	Number	Number	Number		
January	23,300	123	102	0		500		
February	11,300	60	50	7,600		0		
March	12,300	65	54	6,600		0		
April	13,500	71	59	5,400		0		
May	17,800	94	78	1,100		0		
June	17,600	86	77	2,900		0		
July	31,600	154	137	0		8,800		
August	16,000	78	70	4,500		0		
September	13,200	70	58	5,700		0		
October	35,200	186	154	0		12,400		
November	49,400	261	217	0		26,600		
December	34,500	183	151	0		11,700		

1/ Excess of regular labor supply over requirements

2/ Excess of requirements over feasible on-farm supply in man equivalents

fluidity of labor within the area which tends to underestimate the number of workers needed. Actually the margin of supply over requirements in the High Plains Cotton Area is probably very close. Since labor is used very efficiently in this area, careful consideration should be given to supplying needs for year-round workers created by men leaving farms to enter the armed forces.

A closer approximation to the true farm labor situation within the area may be made by considering the excess of demand over the regular and feasible supply on the area total number of farms in each of the four major size groups in the manner of Table 12. Only those periods in which 1943 requirements exceeded the regular labor supply are shown together with the number of workers needed in each such period from the on-farm reserve and non-farm sources. These results were obtained by multiplying the number of additional workers needed on the average farm in each size group as calculated from the sample by the estimated area total number of farms in that size group. Assuming complete fluidity of labor within the area results in less understatement in Area 3 than in another section of the State where small farms have a surplus of labor at the same time that large farms have a shortage. In the latter instance considerable intra-area recruitment and placement is necessary if the assumed conditions are to be realized. In the High Plains Cotton Area farms in all size groups except the very smallest need additional seasonal workers in the same months -- July, October, November and December which precludes any partial satisfaction of the needs of one group from underemployed workers on farms in another. Since Group I contains only 10 percent of the farms, it little affects the area picture.

Table 12 - Mobilization of labor necessary to meeting requirements of farms in designated cropland size groups, Area 3, High Plains Cotton Area, 1943

Area Total

Cropland size group	Periods of need	Number	Workers needed from reserve supply 1/	Additional 2/			
				Man equivalents	Percent of reserve	Persons	Number
Group I (0-100 acres)	None	None	0	None	None	None	None
Group II (101-180 acres)	January	700	46	1,750	None	None	None
	July	890	100	2,220	1,780	1,780	1,780
	October	1,530	100	3,830	1,400	1,400	1,400
	November	1,530	100	3,830	7,130	7,130	7,130
	December	1,530	100	3,830	1,460	1,460	1,460
Group III (181-360 acres)	January	1,210	100	3,020	1,890	1,890	1,890
	July	680	100	1,700	4,110	4,110	4,110
	October	1,210	100	3,020	5,040	5,040	5,040
	November	1,210	100	3,020	11,120	11,120	11,120
	December	1,210	100	3,020	4,670	4,670	4,670
Group IV (over 360 acres)	January	450	100	1,140	2,120	2,120	2,120
	May	450	100	1,140	50	50	50
	June	190	77	480	None	None	None
	July	250	100	610	3,720	3,720	3,720
	October	450	100	1,140	3,770	3,770	3,770
	November	450	100	1,140	7,090	7,090	7,090
	December	450	100	1,140	3,530	3,530	3,530

1/ Excess of requirements over "regular labor supply." Where additional hired labor is needed complete utilization of reserve supply is assumed. Since "reserve" is composed of women and school children, a ratio of 40 percent was used as a conversion factor.

2/ After fully utilizing "feasible on-farm supply."

### Supply and Demand Situation on Farms of Different Sizes

As yet we have seen only a part of the demand side of the picture as it relates to farms of different sizes. Charts 5 and 6 portray graphically the relationship between labor requirements (Table 13) and the two levels of labor supply (Table 14) on the average farm in each of the designated cropland size groups; hence, indicate for each month the extent of seasonal underemployment and the amount of additional hired labor (if any) needed. These relationships are expressed quantitatively in Table 15.

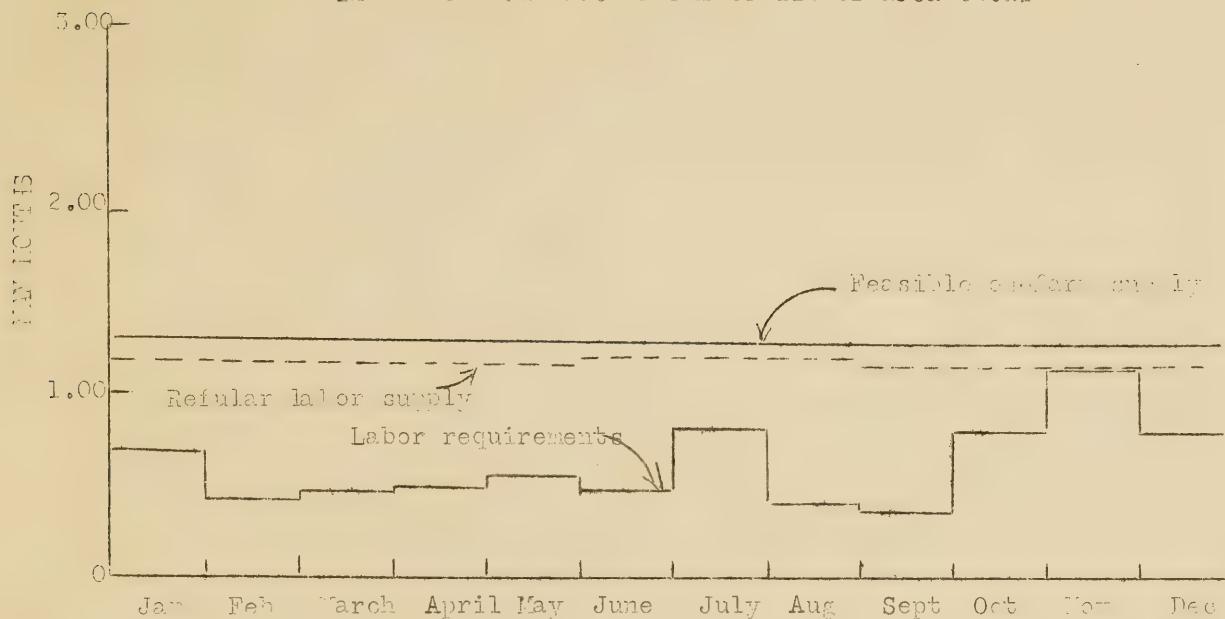
The seasonal distribution of labor requirements is very similar on all four farms. This is because the crop and livestock organization on the smallest farms is very little different from that on the average of the largest units. (Table 16) Cotton and grain sorghum are the only important crops and livestock are of secondary importance in all four groups. Grain sorghum is relatively more important on larger farms than on the smaller ones but cotton occupies about one-third the cropland throughout.

With the exception of those farms with less than 100 acres cropland, the labor situation is precisely the same -- seasonal shortage in July and October through January. The two larger size groups, those having more than 180 acres cropland, make relatively better use of their regular labor supply in non-peak months than do farms with less than 180 acres cropland. This relates fairly closely to the minimum size of unit required to employ fully a family. It will be noted from Table 17 that farms in Group I through the lower part of Group III are largely one-family units. This conclusion is based on the small proportion of hired labor in the on-farm labor supply of the average farm in these three groups. Unlike sharecroppers, regular hired laborers are added to the labor force only if they can be reasonably fully utilized. Group I appears to be something of a misfit -- either by reason of an inadequate number of sample cases to overcome some unusual situations or the fact that farms with less than 100 acres cropland are typically "unusual" in this area.

Using area average labor requirements for all four size groups makes for very little error in this area since virtually all the crop acreage is handled with tractor equipment. The "feasible" labor supply loses its significance in situations like those obtaining on Group III and IV farms where requirements exceed this level of supply 5 to 7 months of the year. Since the calculated on-farm reserve is very small this makes little difference to the interpretation of these tables.

The margin of on-farm labor supply over requirements is particularly close on farms comprising the two largest size groups. Any further reduction in the resident supply on such farms would apparently necessitate some reduction in basic labor requirements. The age and sex composition of the labor supply shown in Table 17 assumes considerable significance in this area in view of the emphasis placed on men under 26 by Selective Service. It is not possible to determine from the data as they are summarized here the percentage of farms having men 18-26 years of age in their labor force or precisely the percentage which men of this age contribute to the labor supply of the group. Fully 8 to 12 percent of the labor supply of farms in Area 3 with more than 100 acres cropland is in the age group to which Selective Service is now confining its inductions.

GROUP I (0-100 ACRES CROPLAND)  
Includes about 1430 farms or 11% of area total



GROUP II (101-180 ACRES CROPLAND)  
Includes about 6730 farms or 49% of area total

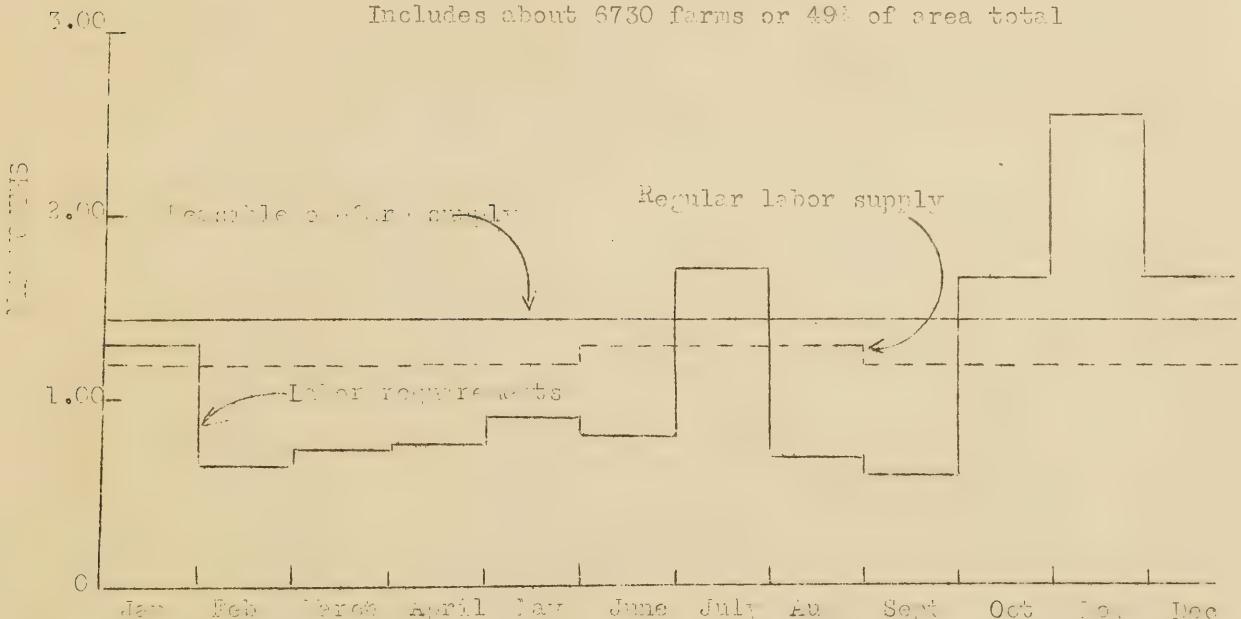


Chart 5. - Labor required and supply available on farms in designated cropland size groups in Area 3, High Plains Cotton Area, 1943.  
Average number of workers per farm in man month equivalents.

## GROUP III ( 181-360 ACRES CROPLAND)

Includes about 4030 farms  
or 31% of area total

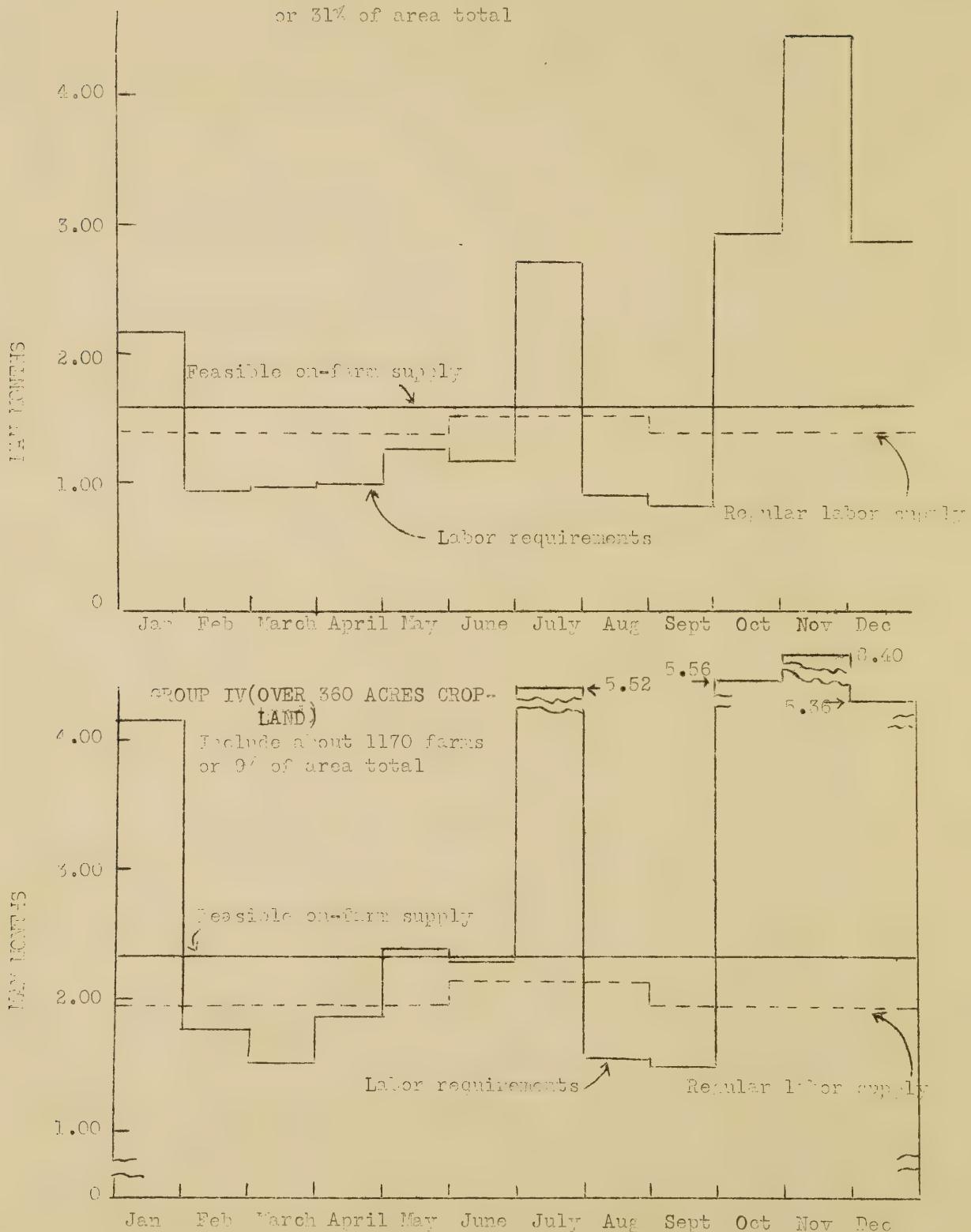


Chart 6. - Labor required and supply available on farms in designated cropland size groups in Area 3, High Plains Cotton Area, 1943. Average number of workers per farm in man month equivalents.

Table 13 - Average labor requirements of farms in designated cropland size groups, Area 3, High Plains Cotton Area, 1943 17

14 months - average per farm

Cropland size group		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	12 months
Group I (0-100 acres)														
Crops		.36	.37	.36	.06	.15	.13	.52	.07	.05	.54	.91	.53	3.45
Livestock		.33	.35	.41	.43	.41	.36	.32	.34	.32	.27	.27	.27	4.03
Total		.69	.42	.47	.49	.56	.49	.84	.41	.37	.81	1.13	.80	7.53
Group II (101-180 acres)														
Crops		.87	.18	.17	.17	.34	.32	1.29	.22	.16	1.35	2.18	1.29	6.54
Livestock		.43	.47	.56	.59	.56	.48	.42	.46	.42	.30	.37	.37	5.43
Total		1.30	.65	.73	.76	.90	.83	1.71	.68	.58	1.65	2.55	1.66	13.97
Group III (181-360 acres)														
Crops		1.61	.33	.29	.28	.59	.57	2.18	.35	.29	2.43	3.98	2.38	15.33
Livestock		.55	.60	.68	.71	.68	.59	.53	.56	.53	.46	.47	.47	6.83
Total		2.16	.93	.97	.99	1.27	1.16	2.71	.91	.52	2.94	4.45	2.95	22.16
Group IV (over 360 acres)														
Crops		3.18	.71	.63	.63	1.22	1.27	4.60	.66	.61	4.74	7.51	4.47	30.23
Livestock		.97	1.05	.78	1.23	1.16	1.02	.92	.98	.85	.82	.89	.89	11.69
Total		4.15	1.76	1.51	1.36	2.38	2.29	5.52	1.64	1.49	5.56	8.40	5.36	41.92

1/ Per unit labor requirements from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838, Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

Table 14 - Estimated labor supply on farms in designated cropland size groups. Area 3, High Plains Cotton Area, 1943

#### Man equivalents - average per farm

Table 15 - Labor utilization on farms in designated cropland size groups. Are 3, High Plains Cotton Area, 1943

Month	Labor requirements as percent of specified supply							
	Group I (0-100)		Group II (101-180)		Group III (181-360)		Group IV (over 360)	
	Regular	Feasible	Regular	Feasible	Regular	Feasible	Regular	Feasible
	labor supply	on-farm supply	labor supply	on-farm supply	labor supply	on-farm supply	labor supply	on-farm supply
January	:	58	:	51	:	110	:	90
February	:	36	:	31	:	55	:	45
March	:	39	:	34	:	62	:	51
April	:	42	:	36	:	64	:	53
May	:	48	:	42	:	76	:	63
June	:	39	:	36	:	62	:	56
July	:	68	:	62	:	133	:	120
August	:	33	:	30	:	53	:	47
September	:	31	:	28	:	49	:	40
October	:	69	:	60	:	139	:	115
November	:	100	:	87	:	216	:	178
December	:	68	:	59	:	140	:	116

Table 16 - Crops and livestock on average farms in designated cropland size groups, Area 3 - High Plains Cotton Area 1943

37

Average per farm

Item	;	:	:	:	:
	Unit	Group I (0-100)	Group II (101-180)	Group III (181-360)	Group IV (361 & over)
Farms in sample	: Acres	: (0-100)	: (101-180)	: (181-360)	: (361 & over)
Total cropland 1/	: No.	: 29	: 182	: 156	: 69
Corn	: Acres	: 62.9	: 149.8	: 280.1	: 518.4
Cotton	: "	: 2.0	: 4.3	: 9.6	: 16.8
Grain sorghum	: "	: 22.7	: 53.9	: 100.5	: 193.9
Forage sorghum	: "	: 12.7	: 40.0	: 73.6	: 181.8
Peanuts	: "	: .6	: 3.0	: 1.9	: 15.8
Small grains	: "	: 1.3	: 1.0	: 6.1	: 7.4
Sudan	: "	: 4.5	: 12.8	: 13.7	: 33.9
Other crops	: "	: 2.6	: 3.0	: 5.0	: 13.3
Land used for crops 2/	: "	: 48.6	: 125.1	: 223.4	: 495.0
As percent of total crop land.	: percent	: 77.2	: 83.5	: 79.8	: 85.1
Milk cows	: No.	: 4.7	: 5.5	: 7.4	: 8.7
Other cattle	: "	: 3.4	: 6.7	: 10.1	: 41.0
Brood Sows	: "	: 1.3	: 1.8	: 2.3	: 5.2
Laying hens	: "	: 112.8	: 180.5	: 164.6	: 208.2
Horses & mules	: "	: .8	: .7	: .7	: 2.9
	:	:	:	:	:

1/"Cropland means farm land which in 1942 was tilled or was in regular rotation".  
Texas Handbook 1943 Agricultural Conservation Program, AAA Southern Division,  
March 1943.

2/Total of listed crops.

Table 17 - Composition of the feasible on-farm supply by designated cropland size groups, Area 3 - High Plains Cotton Area, 1943

Percent of group total supply

Characteristic	;	Group I (0-100)	Group II (101-180)	Group III (181-360)	Group IV (361 and over)
	:	:(0-100)	:(101-180)	:(181-360)	:(361 and over)
Sex of worker	:	:	:	:	:
Male	:	100.0	100.0	100.0	100.0
Female	:	85.5	83.0	83.0	85.3
Age of worker	:	14.5	17.0	17.0	14.7
10-13 years	:	100.0	100.0	100.0	100.0
14-19 years	:	2.6	3.0	3.2	2.3
20-39 years	:	4.1	11.7	12.3	15.6
40-54 years	:	45.3	48.8	48.1	46.5
55-64 years	:	40.6	28.7	29.1	28.5
65 years & over	:	6.2	7.2	6.9	6.2
Type of worker	:	100.0	100.0	100.0	100.0
Family	:	87.2	94.3	81.4	59.4
Hired 1/	:	12.8	5.7	18.6	40.6
	:	:	:	:	:

1/ Includes a few workers enumerated as sharecroppers.

Off-farm employment is not particularly important in the High Plains Cotton Area, probably less important even than Table 18 indicates. There was apparently considerable misinterpretation of the question as it was stated in the Manpower Inventory. Many enumerators apparently took "work off this farm" to mean work on other parts of the same operating unit but covered by different AAA worksheets. Multiple farm operation is prevalent in this area and even careful editing could not eliminate all such cases. A second factor is the inclusion of farm operators who also have a business in town. Only a few cases would materially affect the indicated importance of off-farm employment as a supplement to farm income.

#### Employment per worker per year

By assuming that labor requirements per farm measure the amount of productive employment available on that farm, an estimate may be made of the number of days employment per worker per year afforded by the average farm in

Table 18 - Work off farms during 1942 by persons on farms in designated cropland size groups. Area 3 - High Plains Cotton Area

Items	: Group I : Group II :		Group III:		Group IV			
	:(0-100) : (101-180)		:(181-360)		:(360 & over)			
	M	F	M	F	M	F	M	F
Farms reporting work off farm in 1942 as percent of all farms	:	:	:	:	:	:	:	:
	:	3	:	3	:	7	:	7
Persons reporting working off farm as percent of all persons 10 yrs. & over	:	:	:	:	:	:	:	:
	:	2	:	3	:	5	:	6
Months worked off farm in 1942 average per all farms	:	:	:	:	:	:	:	:
	:	.4	:	.4	:	.7	:	.6
Farms reporting work off farm:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:
Persons working off farm - average per farm	:	:	:	:	:	:	:	:
	:	1.0	:	1.0	:	1.3	:	1.0
Months worked per person working off-farm	:	:	:	:	:	:	:	:
	:	12.0	:	12.0	:	8.7	:	8.5
Months worked per farm reporting	:	:	:	:	:	:	:	:
	:	12.0	:	12.0	:	10.9	:	8.5

each size class. (Table 19). These estimates are based on the average number of workers in the regular labor supply for it is only this segment which is available for full employment. These data further substantiate the previous indications that farms in this area with more than 100 acres cropland provide reasonably full employment for their regular labor supply. This factor together with the efficiency in labor use gained through the use of most modern equipment produces high farm incomes to the people in this area. (Figures 1 and 2).

Table 19 - Employment opportunities afforded by farms in designated cropland size groups, Area 3 - High Plains Cotton Area, 1943

Regular labor supply	: Unit :	Group I : Group II : Group III : Group IV
	: Acres :	(0-100) : (101-180) : (181-300) : (360& over)
Farm employment per worker 1/	: Days :	127 : 184 : 199 : 223
Percent of days available 2/	: Percent:	52.9 : 76.7 : 82.9 : 92.9
Off farm employment per worker	: Days :	26 : 30 : 14 : 19
Total employment per worker	: Days :	153 : 214 : 213 : 242
Percent of days available 3/	: Percent:	58.8 : 82.3 : 81.9 : 93.1

1/ As measured by labor requirements; i.e., total days per year which an average worker in the regular labor supply could find employment at farm work on the home farm.

2/ Assuming 240 days available for farm work.

3/ Assuming maximum of 260 days available for all kinds of work.

#### Rolling Plains Area (4)

Like Area 3 this is an area characterized by highly mechanized cotton production and dependence upon migratory labor for the bulk of the harvest work. Grain sorghum is the only other major crop in the area as a whole, but small grains occupy important acreages in some sections. Similarly, livestock product is relatively unimportant from an overall standpoint, yet grazing is the predominant type of farming in sub-area 4b.

"Wide variations in soils and topography have resulted in mixed types of farming in this area. On the more level areas of sandy loam soils, cotton and grain sorghums are practically the only crops grown, and the organization of farm is similar to that in Area 3, while on the heavier soils or so called "tight land" an important amount of small grain, primarily wheat and oats, is produced. Although large blocks of good, smooth, fertile land are still used for cattle grazing, ranching operations tend to be concentrated in the areas of rolling, broken land. While the entire area is characterized by alternating areas of farming and ranching, the portions of the area in which farming predominates are indicated (on the map on the cover) .....as 4 a and 4c. Sub-area 4b represent the more rolling and broken lands on which grazing predominates. As compared with Area 3, the annual rainfall averages slightly more, the growing season is longer, and the average size of farm is somewhat smaller." 19/

Cotton yields here average somewhat lower than those in the High Plain Cotton Area, and labor requirements per acre are higher. (Table 1) The latter difference is due primarily to the fact that ordinarily about three-fourths of the cotton in Area 4 is chopped or spaced in the row whereas little chopping is done in Area 3. This combination of lower yield and higher requirements causes the hours required per bale to be about 75 percent higher in Area 4 than in Area 3 but even so this requirement is still a fourth less than the average for the

19/ Bonnen, C.A. and Thibodeaux, B.H. "A Description of the Agriculture and Types of Farming Areas in Texas". Texas Agricultural Experiment Station Bulletin No. 544, June, 1937

Black Prairie Area and 60 percent under the comparable figure for East Texas. Labor requirements on grain sorghum are more than twice as high in Area 4 as in Area 3, only part of which is accounted for by higher yields in the latter area.

Farms in this area are less uniform in size than in Area 3. The major concentration is around 130-160 acres of cropland which is somewhat smaller than the "optimum" acreage which could be handled with one set of the two-row tractor equipment typical of this area <sup>20/</sup>. Sample data for the 548 representative farms in Wheeler, Wilbarger, Dickens, Jones and Scurry Counties used in the present analysis of the Rolling Plains Area are divided into four cropland size groups. One of these contains only a small number of large farms separated out to prevent undue distortion of the averages for the next smallest class. These four groups with the estimated percentage of the area total number of farms in each follows: Group 0-100 acres cropland, 23 percent; Group II 101-180 acres cropland, 42 percent; Group III 181-360 acres cropland, 29 percent; and Group IV over 360 acres cropland, 6 percent.

#### Supply and Demand Situation for the Area

From the present indications, Area 4 appears to be a major farm labor problem area (Chart 7). In addition to the June and October-November peaks for which large numbers of seasonal laborers are customarily employed, the regular on-farm labor supply is inadequate to meet requirements in four other months. (Table 20).

The fall harvest peak demands should not present a serious problem unless something completely disrupts the normal migration of cotton pickers who follow the cotton harvest from extreme South Texas to the Plains every year. While the number of migratory workers has been reduced materially from its prewar level, the supply has thus far proven adequate. In all, some 80,000 to 90,000 workers moved into the High and Rolling Plains areas in 1942 and 1943 for cotton and feed harvest. Dependence upon these migrants for the bulk of cotton harvest is an important part of the method of operation which makes this one of the most efficient cotton producing areas. More widespread use of the mechanical cotton stripper, already proven practical in this area, will further relieve this harvest load. A two-row stripper type machine operated by two men will do the work of 12 men snapping cotton by hand. <sup>21/</sup>

Meeting the June peak requirement of more than double the on-farm supply is a more difficult problem than that created by cotton and feed harvest, for normally there is no large scale migration of workers to this area during the spring months. Cotton chopping and hoeing, small grain harvest, and hoeing of grain sorghum all demand attention at the same time. Both the time required by these operations and the period in which they are performed are here based on usual or prewar practices and a relatively abundant supply of labor. It is

<sup>20/</sup> Czarowitz, P. H. and Bonnen, C. A. "Information Basic to Farm Adjustments in the Rolling Plains Area of Texas." Texas Agricultural Experiment Station Bulletin No. 617 Sept., 1942

<sup>21/</sup> "Gearing Texas Cotton to War Needs" Texas Agricultural Experiment Station, Bulletin No. 624, November, 1942

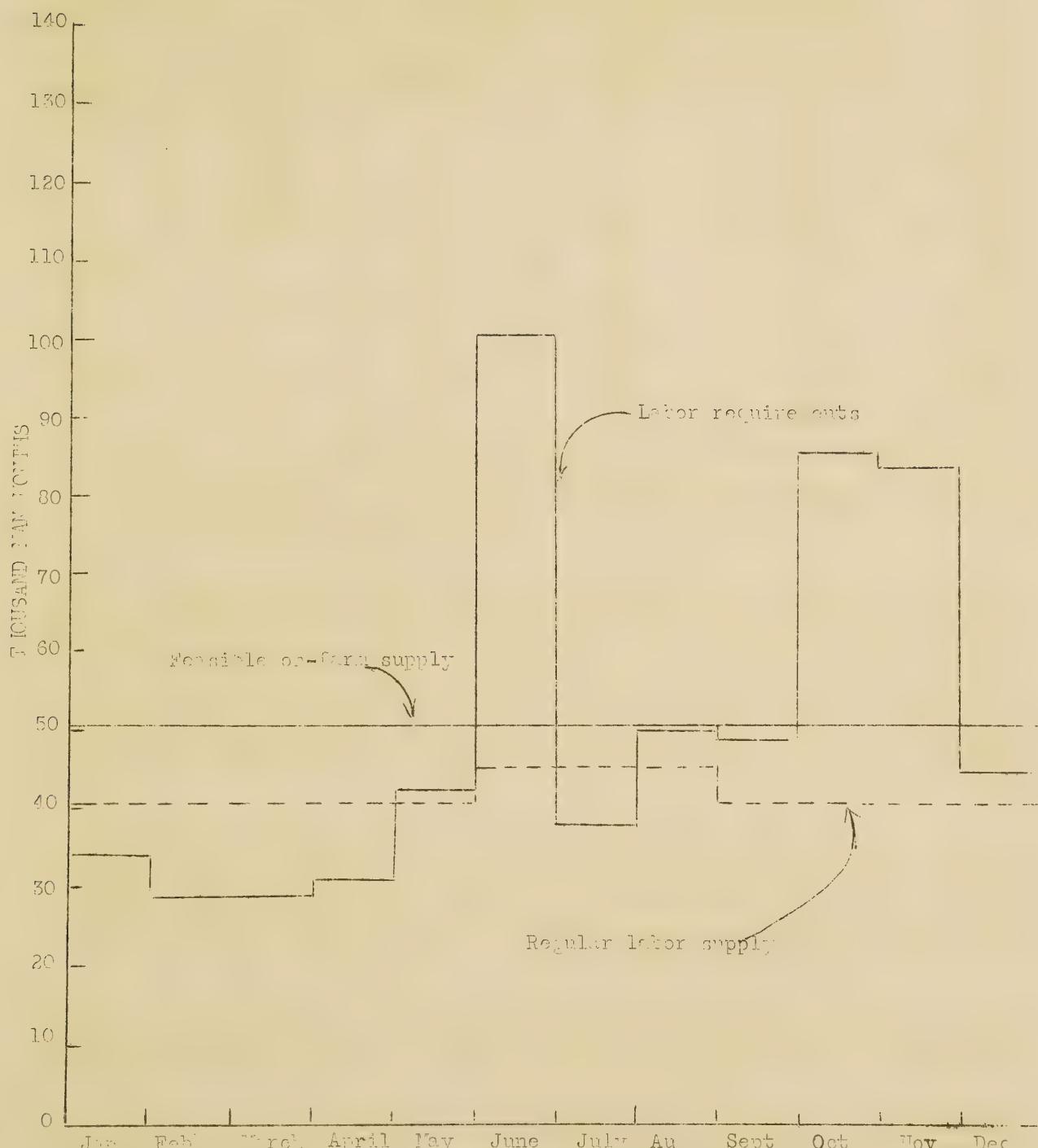


Chart 7. - Labor required and supply available on farms in Area 4, Rolling Plains Area, 1943. (From total number of workers in one month equivalents.)

Table 20 - Labor utilization, Area 4, in the Rolling Plains Area

## Area Total

Month	Total labor requirements			Workers avail-			Additional
	Total man months	As percent of supply from regular labor	Feasible on-farm supply	able for other employment 1/	hired workers needed 2/		
	Numbers	Percent	Percent	Number	Number		
	:	:	:	:	:	:	:
January	33,900	84	67	6,700	0		
February	28,600	70	57	12,000	0		
March	28,700	71	57	11,900	0		
April	30,600	75	61	10,000	0		
May	42,100	104	84	0	0		
June	100,700	224	201	0	50,400		
July	37,600	84	75	7,400	0		
August	49,900	111	99	0	0		
September	48,500	120	96	0	0		
October	85,300	210	170	0	35,000		
November	83,600	206	166	0	33,300		
December	44,600	110	89	0	0		
:	:	:	:	:	:		

1/ Excess of regular labor supply over requirements in man equivalents.

2/ Excess of requirements over feasible on-farm supply in man equivalents.

probable that a smaller than usual percentage of cotton is being chopped at the present time, 22/ and that the hoeing of both cotton and grain sorghum is being spread out over longer than usual periods. This would mean that something less than the indicated 50,000 additional seasonal workers would be needed during June. The extent to which these means for reducing the spring peak load may be practicably employed depends to a great extent upon the season. It is worth noting, however, that more than half the increase in June over the more or less constant basic requirements results from demands for cotton chopping and hoeing and another 20 percent for hoeing grain sorghum.

It also seems reasonable to assume that the actual resident labor force in 1943 was somewhat larger than these data indicate. The survey was taken in March, April and early May at which time crop requirements are low. There would be considerable advantage to an operator in waiting until May to employ his regular hired hands for the crop season. If this assumption is correct, the basic labor situation is not quite as tight as Chart 7 suggests.

On the other side of the picture, labor on farms in Area 4 is reasonably fully utilized, requirements totaling more than 80 percent of the capacity of the regular labor supply in 9 months of the year. (Table 20). While Column 4

22/ Under normal conditions about three fourths of the cotton in this area is spaced in the row. Texas Agricultural Experiment Station, Bulletin No. 624 November, 1942

of Table 20 indicates that some 10,000 workers on farms in this area are available for other employment during the early spring months, it is doubtful if any large number could be recruited for other agricultural areas. In view of the strain of local farm demands upon the resident supply from May on, recruitment for even short term employment elsewhere would be of doubtful advisability. Such an overall area comparison as this must necessarily assume complete fluidity of labor within the area which tends to underestimate the number of workers needed. The margin of supply over requirements in Area 4 is exceedingly close even in "slack" periods. Since labor is used very effectively in this area, careful consideration should be given to supplying needs for year-round workers and especially to filling vacancies created by men leaving farms to enter the armed forces.

Actually the labor "problem" in any area is somewhat different and more complex than an overall comparison of supply and demand indicates. A closer approximation to the true situation within the area may be made by considering the excess of requirements over the regular and feasible supply on all of the farms in each of the four major size groups in the manner of Table 21. For the present, only those periods in which requirements exceed the regular labor supply are shown together with the number of workers needed in each such period from the on-farm reserve and non-farm sources. These results were obtained by multiplying the number of additional workers needed on the average farm in each size group as calculated from the sample by the estimated area total number of farms in that size group. In June, October and November when farms in all four size groups require additional seasonal workers, the situation is not different from that revealed by the overall area comparison. It is significant, however, that the smallest fourth of the farms in this area require very little additional help while more than 25 percent of the demand for seasonal labor is on the upper 6 percent of the farms. This is of course related to the scale of operation but has important bearing on the urgency of meeting these seasonal needs. Considerable intra-area recruitment and placement would be required in January, May, July, August and September if demands of the larger farms are to be met from local farm sources. It is this problem of getting seasonally under-employed people on one farm to help meet the needs of larger operators even in the same area, which causes the area comparison to underestimate the real placement problem. Actually the number of additional workers needed and employed in cotton harvest will in most seasons exceed the numbers shown in Column 4 of Table 21 even in a relative sense. Farmers in this area hire more of their cotton snipped than would be necessary if they harvested all they could themselves. Also the demands upon the on-farm reserve are more constant and heavier than can probably be met. Even the basic assumptions on which this part of the supply was calculated did not consider women and school children to be available for such extended periods even in an emergency. The reserve is small, however, and this variation does not particularly impair the usefulness of these indications.

#### Supply and Demand Situation on Farms of Different Sizes

Thus far only a part of the demand side of labor supply-demand relations on farms of different sizes has been considered. In many respects, the often overlooked seasonal underemployment aspect of the farm labor problem is even more important than that of meeting peak seasonal demands. Charts 8 and 9 portray graphically the relationship between labor requirements (Table 22) and the two levels of labor supply (Table 23) on the average farm in each of the designated cropland size groups. As in the case of the earlier area total comparisons,

Table 21 - Mobilization of labor necessary to meeting requirements of farms in designated cropland size groups, Area 4, Rolling Plains Area, 1943.

Area Total

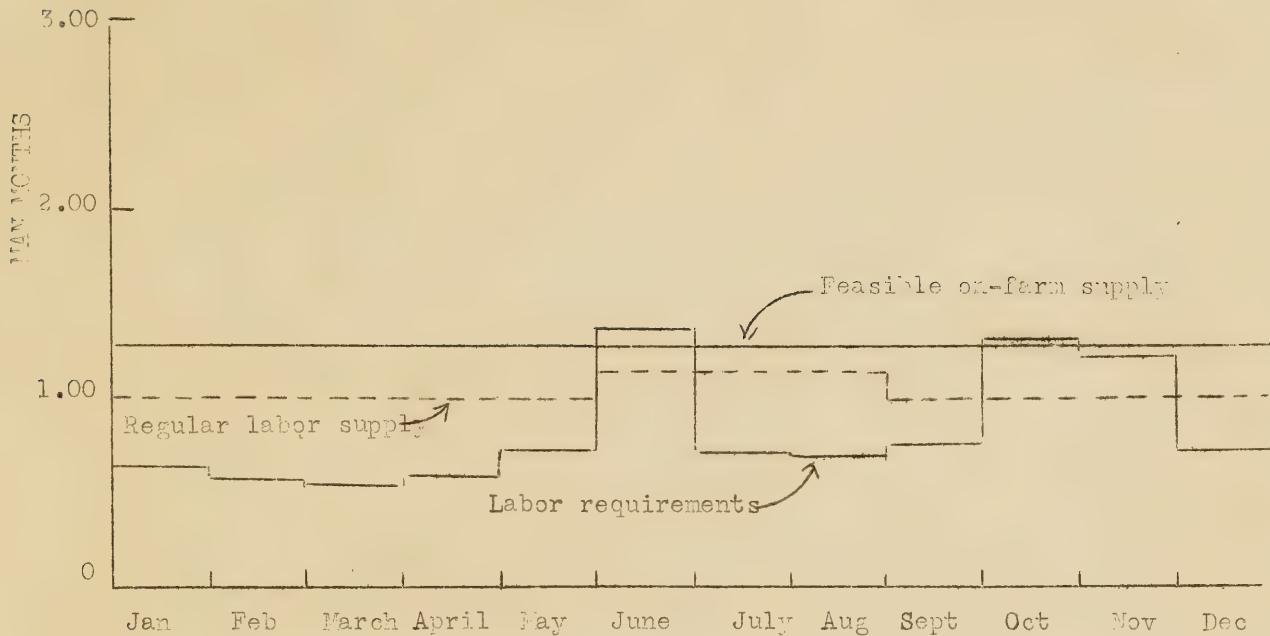
Cropland size group	Periods of need	Workers needed from reserve supply 1/			Additional 2/	
		Man equivalents		Persons	seasonal hired workers needed	
		Number	reserve	number	man equivalents	
Group I (0-100 acres)	June	970	100	2,420	620	
	October	1,800	100	4,500	280	
	November	1,460	81	3,650	None	
Group II (101-180 acres)	June	1,990	100	4,980	15,190	
	September	760	20	1,900	None	
	October	3,600	100	9,000	9,730	
	November	3,600	100	9,000	8,810	
Group III (181-360 acres)	January	530	17	1,320	None	
	May	3,110	100	7,780	1,070	
	June	1,690	100	4,220	23,910	
	July	1,690	89	4,220	None	
	August	1,690	100	4,220	3,290	
	September	3,110	100	7,780	4,630	
	October	3,110	100	7,780	16,700	
	November	3,110	100	7,780	16,540	
	December	3,110	100	7,780	1,690	
Group IV (over 360 acres)	May	940	100	2,350	700	
	June	510	100	1,280	12,680	
	July	510	100	1,280	200	
	August	510	100	1,280	2,190	
	September	940	100	2,350	3,010	
	October	940	100	2,350	8,290	
	November	940	100	2,350	9,090	
	December	940	100	2,350	1,410	

1/ Excess of requirements over "regular labor supply." Where additional hired labor is needed complete utilization of reserve supply is assumed. Since "reserve" is composed of women and school children, a ratio of 40 percent was used as a conversion factor.

2/ After fully utilizing "feasible on-farm supply."

## GROUP I (0-100 ACRES CROPLAND)

Includes about 6,970 Farms or 23% of area total



## GROUP II (101-180 ACRES CROPLAND)

Includes about 12,730 Farms or 42% of area total

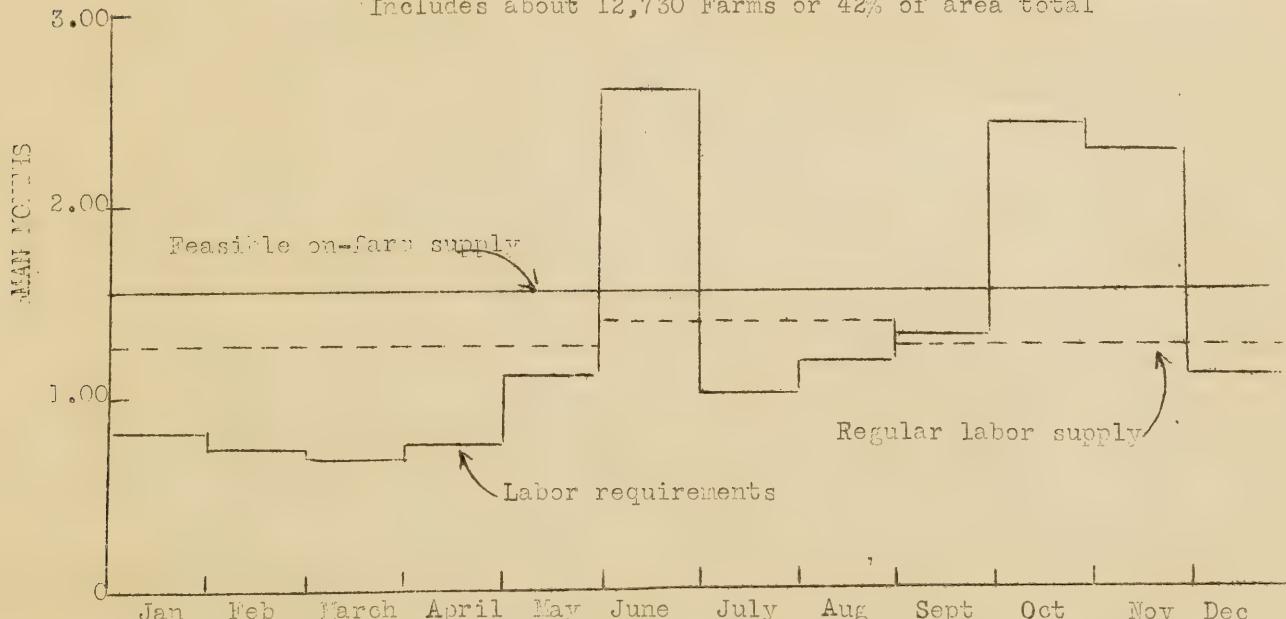
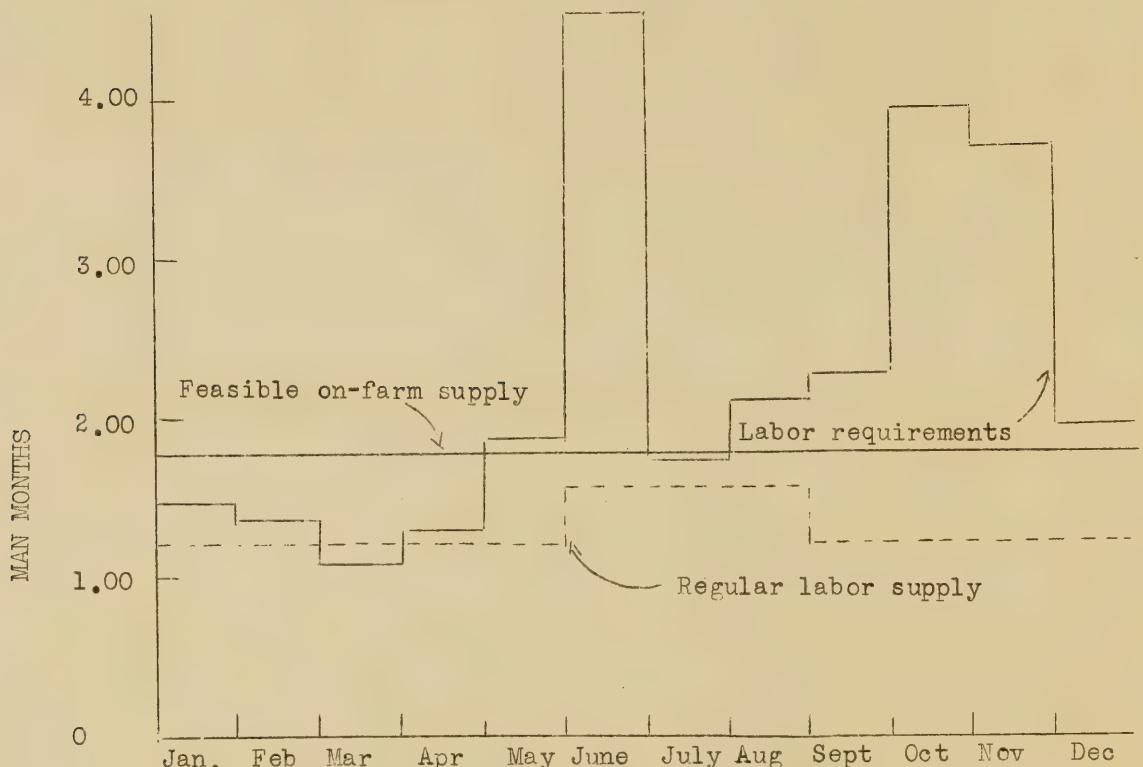


Chart 8.- Labor required and supply available on farms in designated cropland size groups in Area 4, Rolling Plains Area, 1943.  
Average number of workers per farm in man-month equivalents.

## GROUP III

(181-360 ACRES CROPLAND)

Includes about 8790 farms or 29% of area total



## GROUP IV

(OVER 360 ACRES CROPLAND)

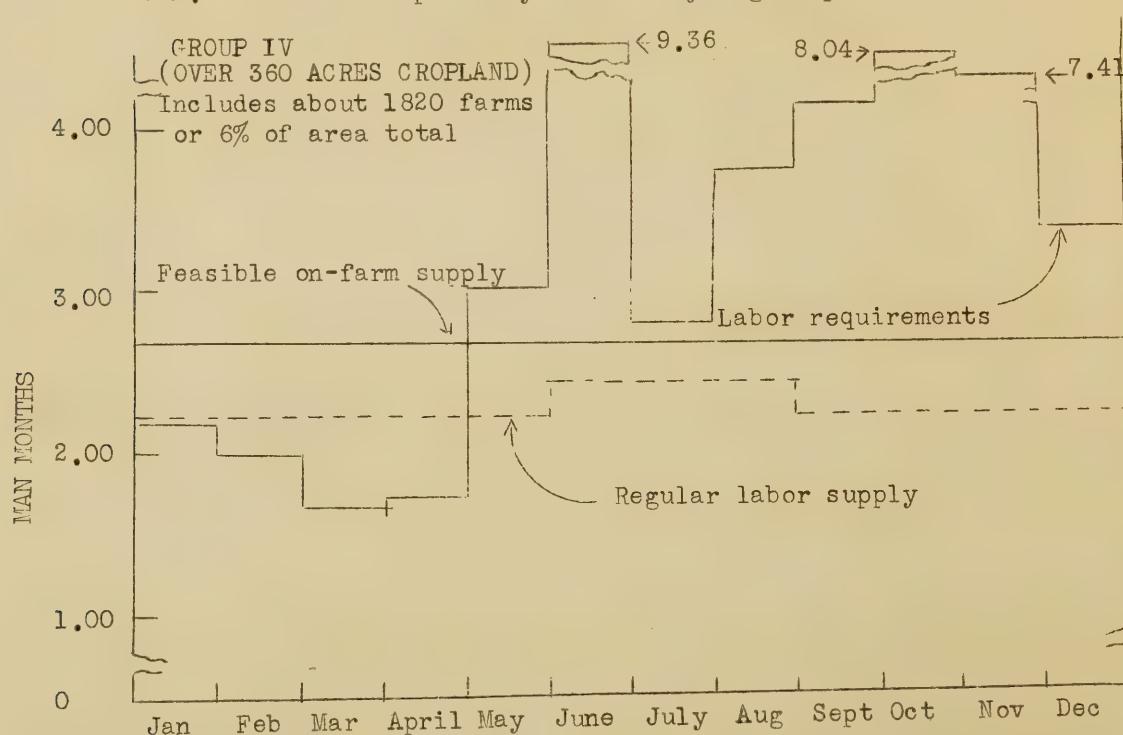
Includes about 1820 farms  
or 6% of area total

Chart 9. - Labor required and supply available on farms in designated cropland size groups in Area 4, Rolling Plains Area, 1943.  
Average number of workers per farm in man month equivalents.

Table 2 - Average labor requirements of farms in designated cropland size groups, Area 4, Rolling Plains area, 1943 1/  
In months - average per farm

Cropland size group		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	12 month total
Group I (0-150 acres)	Crops	.13	.11	.03	.06	.25	.96	.26	.31	.38	.94	.82	.27	4.59
	Livestock	.51	.47	.47	.51	.49	.42	.46	.40	.39	.39	.42	.46	5.39
	Total	.64	.58	.55	.74	1.38	.72	.71	.77	1.33	1.24	.73	.98	9.98
Group II (151-180 acres)	Crops	.27	.22	.17	.18	.56	2.15	.52	.75	.39	2.02	1.83	.60	10.16
	Livestock	.55	.51	.52	.57	.55	.46	.50	.43	.43	.42	.46	.50	5.90
	Total	.82	.73	.69	.75	1.11	2.61	1.52	1.13	1.32	2.44	2.29	1.10	16.06
Group III (181-360 acres)	Crops	.53	.43	.24	.29	.93	3.76	.33	1.38	1.53	3.22	2.95	1.36	17.20
	Livestock	.95	.94	.95	1.31	.96	.80	.87	.76	.76	.79	.90	1.45	
	Total	1.48	1.37	1.19	1.30	1.89	4.56	1.75	2.14	2.29	3.98	3.74	1.96	27.65
Group IV (over 360 acres)	Crops	1.11	.92	.55	.55	1.89	3.43	1.77	2.87	3.27	7.17	6.46	3.33	37.32
	Livestock	1.08	1.37	1.10	1.17	1.12	.93	1.00	.87	.87	.37	.95	1.03	12.06
	Total	2.19	1.99	1.65	1.72	3.01	9.36	2.77	3.74	4.14	8.34	7.41	3.36	49.38

1/ Per unit labor requirements from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838, Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

Table 23 - Estimated labor supply on farms in designated cropland size groups. Area 4, Rolling Plains Area 1943

Man equivalents - average per farm

Cropland size group	Regular labor supply			Feasible on-farm supply					
	Male	Female	Total	Male	Female	Total			
	Sept. to May incl.	June to Aug. incl.	Sept. to May incl.	June to Aug. incl.	Male	Female			
Group I (0-100)	.96	1.06	.07	.09	1.03	1.15	1.06	.23	1.29
Group II (101-180)	1.17	1.28	.09	.11	1.26	1.39	1.28	.27	1.55
Group III (181-360)	1.32	1.45	.10	.13	1.42	1.58	1.45	.32	1.77
Group IV (over 360)	2.08	2.25	.13	.17	2.21	2.42	2.25	.42	2.67

Table 24 - Labor utilization on farms in designated cropland size groups. Area 4, Rolling Plains Area 1943

these comparisons indicate the extent of seasonal underemployment and the amount of hired labor (if any) needed. These relationships are expressed quantitatively in Table 24.

Differences in Area 4 between farms of different sizes in the seasonal distribution of labor requirements are merely a matter of degree. This is so because the crop and livestock organization on the smallest size farms is little different from the average of any of the other groups (Table 25). Small grains occupy nearly one-fifth the total cropland on the largest farms compared to about 11 percent on Group III and 5 percent on the other two groups. Cotton and grain sorghums, the two principal labor consuming crops, each are equally important on all four groups. The same is largely true of livestock.

Farms with less than 100 acres cropland, Group I, have a problem of labor utilization much like that characterizing cotton producing areas to the east where the scale of operation is geared largely to the ability of the resident labor force to meet the seasonal peak requirements. Such a system of cotton farming must inevitably result in considerable under-employment of the operator and his family. Since there are nearly 7,000 farms in this size class in Area 4, there is a considerable pool of under-utilized workers on those farms. Group II apparently is fairly close to the minimum size of unit needed to fully employ a family in this area. Regular hired laborers make up only a slightly higher percentage of the on-farm supply in Group III than in Group II (Table 26) but a farm with more than 180 acres cropland would tax the labor resources of one family. In fact, it seems improbable that either of the two largest size groups could have operated in 1943 on such a narrow margin of regular on-farm supply over basic requirements as these comparisons indicate. This adds further weight to the conclusion that under-reporting of workers was heavier on the larger units, they operate at a higher level of efficiency than the area average labor requirements assume, and additional regular hired hands are customarily employed just ahead of the June peak. Except for those farms in Group I, any further reduction in the resident labor supply on farms in this area would apparently necessitate some reduction in basic labor requirements. In view of the shift in Selective Service's emphasis to men under 26, the age and sex composition of the labor supply shown in Table 26 assumes considerable significance in this area. It is not possible to determine from this summary the percentage of farms having men 18-26 years of age in their labor force nor precisely the percentage which men of this age contribute to the labor supply of the group. Fully 10 to 15 percent of the labor supply on farms in Area 4 is in the age group from which Selective Service is now drawing to meet its needs.

Off-farm employment is not ordinarily an important source of supplemental income in the Rolling Plains. Notwithstanding the many varied opportunities in camp construction, war plants, etc., during 1942, off-farm employment was probably even less important in this area than Table 27 indicates.

There was apparently considerable misinterpretation of this question as it was stated in the Manpower Inventory. Many enumerators apparently took "work off this farm" to mean work on other parts of the same operating unit but covered by different AAA worksheets. This tended to exaggerate actual off-farm employment especially on the large units for even careful editing could not eliminate all such cases. Since only 10 to 15 percent of the farms in any size group reported any work off the farm in 1942, many actually so employed apparently worked about full time.

Table 25 - Crops and livestock on average farms in designated cropland size groups, Area 4, Rolling Plains Area, 1943

Average per farm

Item	Unit	Average per farm			
		Group I (0-100)	Group II (101-180)	Group III (181-360)	Group IV (361 & over)
Farms in sample	Acres	(0-100)	(101-180)	(181-360)	(361 & over)
Total cropland 1/	No.	125	225	161	37
	Acres	62.7	137.1	249.0	588.7
Corn	"	3.9	5.5	7.9	12.4
Cotton	"	20.2	47.0	74.7	172.8
Grain sorghum	"	14.8	37.7	67.9	134.0
Forage sorghum	"	6.4	16.2	29.1	57.4
Small grains	"	2.7	7.1	26.9	111.0
All hay	"	.8	1.5	3.1	3.4
Sudan	"	311	5.9	8.6	27.3
Other crops	"	5.0	5.2	7.7	4.6
Land used for crops 2/	"	56.9	126.1	225.9	522.9
As percent for total cropland	Percent	90.7	91.9	90.7	88.8
Milk cows	No.	3.8	3.6	6.8	7.3
Beef cattle	"	5.7	9.0	22.3	30.2
Brood sows	"	1.1	1.3	2.6	2.6
Laying hens	"	8944	128.2	137.5	171.9
Horses & mules	"	2.3	1.7	3.2	4.0
All sheep	"	0	.7	16.5	19.7

1/ "Cropland means farm land which in 1942 was tilled or was in regular rotation. Texas Handbook 1943 Agricultural Conservation Program AAA Southern Division, March 1943.

2/ Total of listed crops.

Table 26 - Composition of the feasible on-farm labor supply by designated cropland size groups, Area 4 - Rolling Plains Area 1943.

Percent of group total supply

Characteristic	Percent of group total supply			
	Group I (0-100)	Group II (101-180)	Group III (181-360)	Group IV (361 & over)
Sex of worker				
Male	100.0	100.0	100.0	100.0
Female	81.9	82.5	81.9	84.1
Age of worker	18.1	17.5	18.1	15.9
10-13 years	100.0	100.0	100.0	100.0
14 - 19 years	4.2	3.5	3.7	3.2
20 - 39 years	12.7	14.3	14.7	13.7
40 - 54 years	33.7	43.7	35.6	41.3
55 & 64 years	36.5	28.3	36.0	34.7
65 years & over	11.3	9.5	9.3	6.6
Type of worker	1.6	.7	.7	.5
Family	100.0	100.0	100.0	100.0
Hired 1/	92.0	83.6	79.3	46.3
	8.0	16.4	20.7	53.7

1/ Includes a few workers enumerated as sharecroppers

Table 27 - Work off farms during 1942 by persons on farms in designated cropland size groups, Area 4, Rolling Plains Area.

Items	: Group I		: Group II		: Group III		: Group IV	
	:(0-100)		:(101-180)		:(181-360)		:(360 & over)	
	: M	: F	: M	: F	: M	: F	: M	: F
Farms reporting work off farm in 1942 as percent of all farms	:	:	:	:	:	:	:	:
Persons reporting working off farm as percent of all persons 10 yrs. & over	: 13	: 2	: 13	: 8	: 11	: 0	: 16	: 6
Months worked off farm in 1942 average per all farms	: 9	: 2	: 11	: 7	: 7	: 0	: 9	: 6
Farms reporting work off farm:	:	:	:	:	:	:	:	:
Persons working off farm - average per farm	:	:	:	:	:	:	:	:
Months worked per person working off farm	:	:	:	:	:	:	: 1.5	: 2.5
Months worked per farm reporting	:	:	: 9.8:12.0	: 8.3: 2.6	: 7.3:	:	: 6.2	: 2.2
			: 10.4:12.0:11.4:	: 3.4: 8.6:	:		: 9.3	: 5.5
			:	:	:	:	:	:

#### Employment per Worker per Year

By assuming that labor requirements per farm measure the amount of productive employment available on that farm, an estimate may be made of the number of days employment per worker per year afforded by the average farm in each size class. (Table 28). These estimates are based on the average number of

Table 28 - Employment opportunities afforded by farms in designated cropland size groups, Area 4, Rolling Plains Area 1943.

Regular Labor Supply	: Unit	: Group I	: Group II	: Group III	: Group IV
	: Acres	: (0-100)	: (101-180)	: (181-300)	: (301 +)
Farm employment per worker 1/	: Days	: 174	: 195	: 242	: 229
Percent of days available 2/	: Percent	: 72.5	: 81.2	: 100.8	: 95.4
Off farm employment per worker	: Days	: 30	: 28	: 14	: 17
Total employment per worker	: Days	: 204	: 223	: 256	: 246
Percent of days available 3/	: Percent	: 78.5	: 85.8	: 98.5	: 94.6

1/ As measured by labor requirements; i.e. total days per farm which an average worker in the regular labor supply could find employment at farm work on the home farm.

2/ Assuming 240 days available for farm work.

3/ Assuming maximum of 260 days available for all kinds of work.

workers in the regular labor supply for it is only this segment which is available for full employment. Again these give an indication that requirements are too high or the regular labor supply too low on the two largest size groups. The 101 percent employment for persons on Group III farms, though improbable is not impossible under the present method of calculation for the weighted average of hours available for work can exceed 2,400 which is taken here as full employment at farm work. As indicated earlier the regular labor supply on Group I farms cannot be fully employed under existing conditions. Under-employment is much less damaging to the operator's welfare here, however, than in areas of low labor productivity. The effect of fuller employment and more efficient operation is illustrated by a survey of 100 farms in Jones County in 1935, which showed the net cash income of farms with less than 120 acres total land averaged \$962 in that year; farms of 120 to 180 acres \$1,501; those with 181 to 260 acres \$1,973; and farms with more than 260 acres averaged \$2,564.<sup>23/</sup> Now that cotton acreage restrictions have been removed, operators of small farms may choose to move toward more intensive use of cropland to more fully use their time and increase their income where additional land is not available for increasing the scale of operation. Present difficulties in securing seasonal workers when needed especially in the spring months, however, will probably deter both types of adjustment.

#### The Black Prairie Area (14)

This area is comprised of all or parts of 33 counties and extends from the Oklahoma border southwestward some 300 miles to the vicinity of San Antonio. Intermediate on the map between the small-farm section of East Texas and the mechanized large-scale cotton growing regions of the Plains, the Black Prairie is in many respects a transition zone. In its dependence upon migratory workers for picking half or more of the cotton, this area is a step away from the method of cotton production characterizing areas to the east in which even seasonal peak requirements are met largely with resident labor. Similarly, it is intermediate with respect to scale of operation and mechanization, as about two-thirds the crop acreage is operated with tractor equipment compared to virtually none in the Northeast Sandy Lands and practically all in the Plains.

"In general, the agriculture of the area is characterized by the predominance of cotton production. Until very recently, cotton occupied approximately 65 percent of the cropland and furnished about 90 percent of the cash farm income. With the establishment of the Agricultural Adjustment programs the emphasis has shifted somewhat from cotton to livestock. Cotton now occupies about 40 percent of the cropland. All classes of livestock have increased, but the increases have come slowly owing to lack of facilities on the one hand, and to lack of management knowledge on the other."

"Corn has always been the most important feed crop, second in acreage only to cotton, and exceeding the combined acreage of all small grain, grain sorghums, and hay. Feed crops, including corn, grain sorghums, small grains,

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<sup>23/</sup> Czarowitz, P. H. and Bonnen, C.A. "Information Basic to Farm Adjustments in the Rolling Plains Area of Texas." Texas Agricultural Experiment Station Bulletin No. 617

hay, and pasture, have taken up a large percentage of the acreage diverted from cotton. Some vegetables, especially onions, have become important in some parts of the area.

"Within the past ten years, tractors have displaced many mules and horses, but most farms of the area still depend on some workstock for farm power. Where tractors are used for row crop operations, these are predominantly of the two-row all-purpose type." <sup>24/</sup>

It is about 300 miles from the southern tip of the Black Prairie to its northern limit and so there is approximately a month's difference in season between the southern end of the area and the average of the northern portion. In order to overcome this seasonal spread in labor requirements, the area has been divided into two parts for the purpose of this analysis, the northern portion corresponding to type-of-farming sub-area 14a and the southern segment to sub-area 14b and 14c. Since they are otherwise so much alike, the two sections will be discussed together. The succeeding analysis of labor supply, demand and utilization in these two sub-areas is based on sample data for 596 representative farms in five sample counties; 319 in Bell, Collin and Navarro counties and 277 in Karnes and Fayette counties representing sub-areas 14a and c respectively. These data have been summarized by five major cropland size groups, the largest two of which in each instance contain only a few farms. They could not very well be combined with any other size group, however, without distorting the respective group averages and obscuring important features of the labor picture. These five groups with the estimated percentages of farms each represents in each sub-area are: Group I: 0-50 acres cropland, Area 14a 19 percent and Area 14b and c 36 percent; Group II: 51-100 acres cropland, Area 14a 48 percent and 14b and c 40 percent; Group III: 101-180 acres cropland, Area 14a 48 percent and Area 14b and c 15 percent; Group IV: 181-300 acres cropland, Area 14a 10 percent and Area 14b and c 6 percent; and Group V: over 300 acres cropland, Area 14a 3 percent and Area 14b and c 3 percent. While only 10-15 percent of the farms in the Black Prairie have more than 180 acres of cropland, these farms are particularly important from a labor standpoint. Farms in these two size groups contain about two-fifths of the total cropland in this area and represent approximately half the total demand for additional seasonal workers.

#### Supply and Demand Situation for the Area

The current farm labor problem in the Black Prairie Area has two conflicting aspects -- marked seasonal underemployment half of the year; heavy seasonal demands for additional hired workers during cotton harvest and heavy strain on the resident labor supply in three spring months. (Charts 10 and 11). These comparisons of the overall area on-farm supply and labor requirements indicate that sufficient labor was available on farms in 1943 to meet the spring peak load of cotton chopping in both sub-areas if the entire feasible supply could be fully mobilized and effectively used throughout this period. To do so

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24/ "Wartime Production Capacity of Texas Agriculture" Bureau of Agricultural Economics and Texas Agricultural Experiment Station, October, 1943.

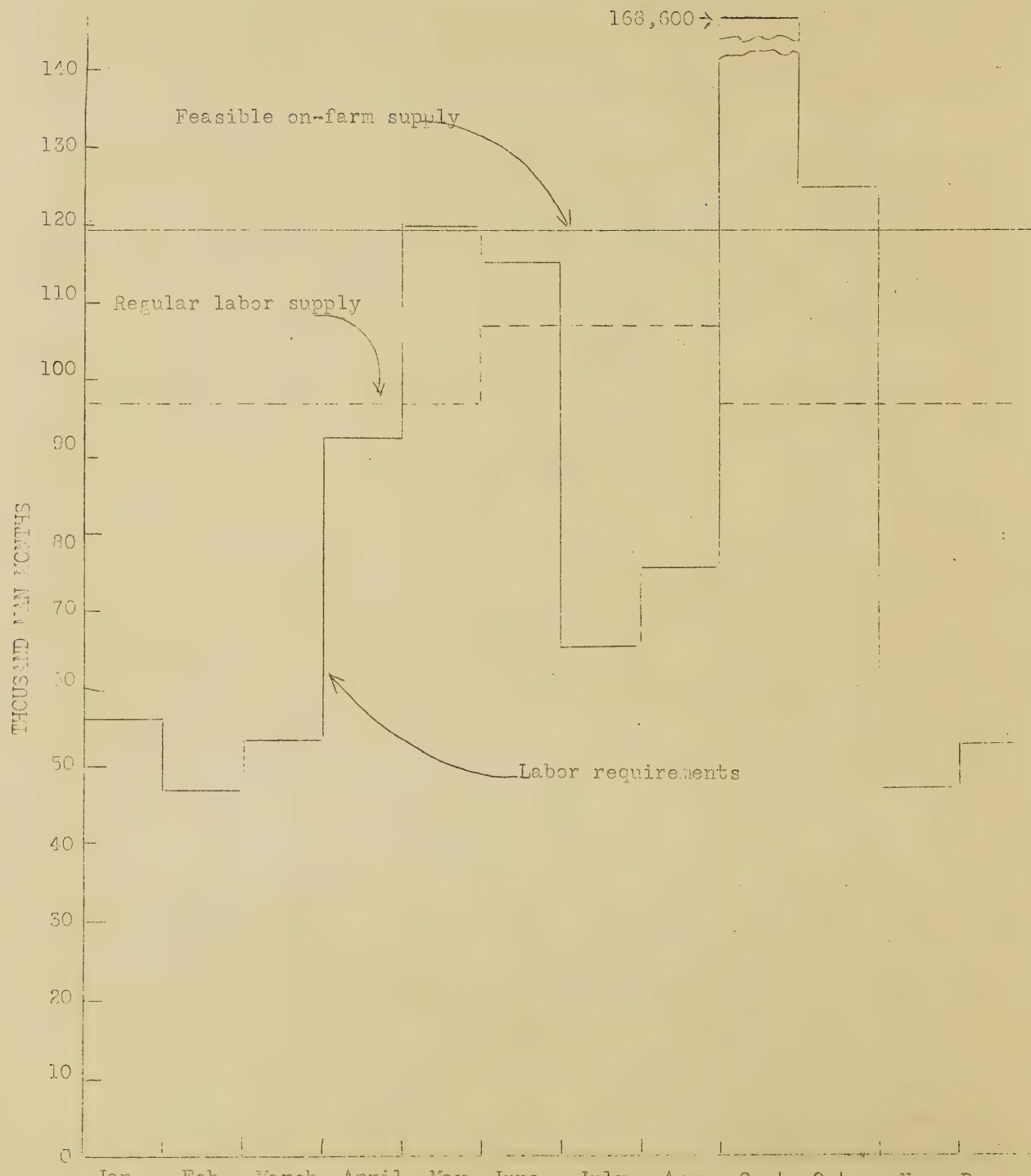


Chart 10. - Labor required and supply available on farms in Area 14,  
The Black Prairie Area, 1943. Area total number of workers  
in man month equivalents.

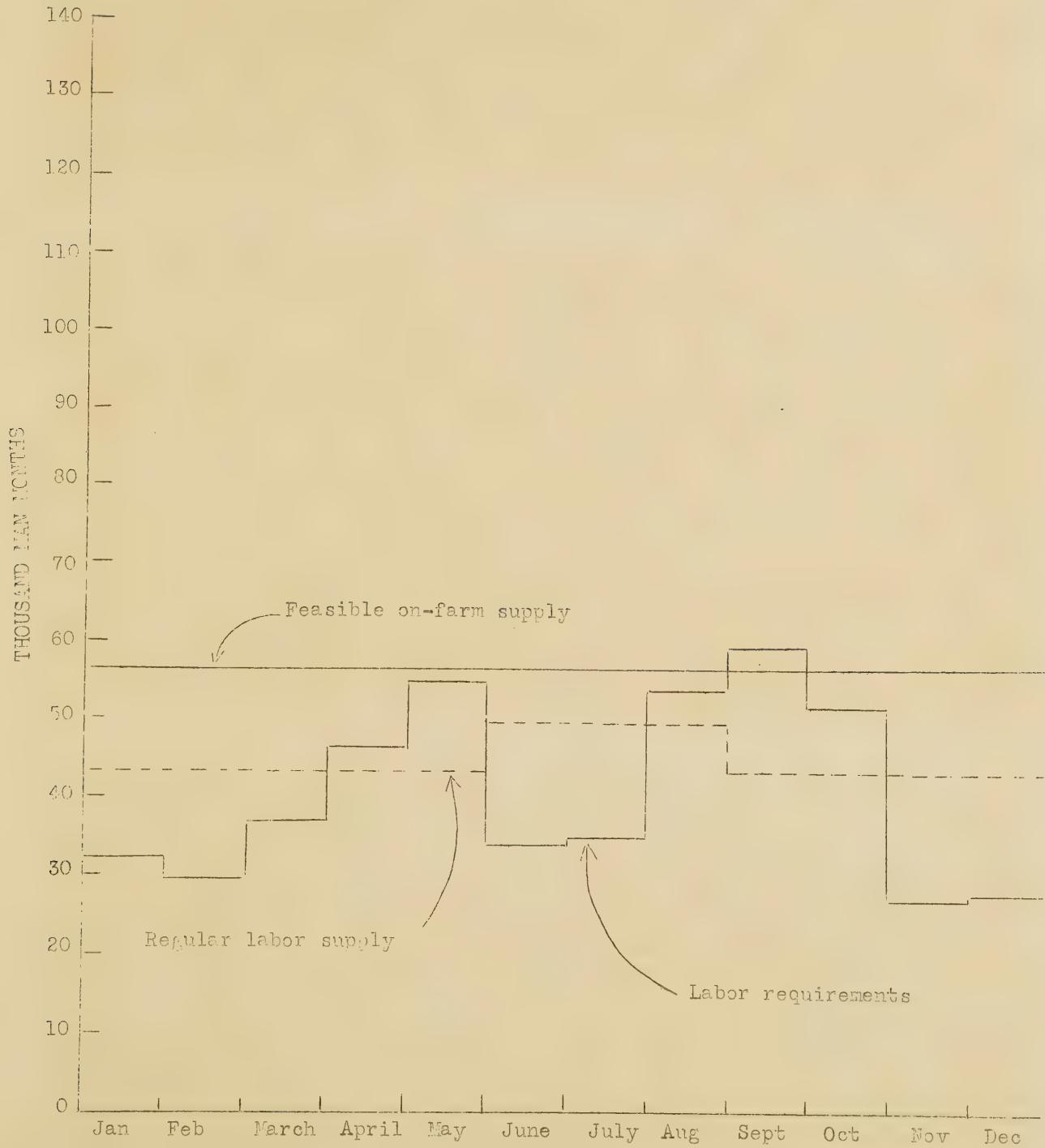


Chart 11. - Labor required and supply available on farms in Area 14, The Black Prairie Area, 1943. Area total number of workers in man month equivalents.

would necessitate some adjustment in the normal school term, but this has become a common practice in many localities. In September, however, a minimum of 49,000 workers in addition to the feasible on-farm supply are needed in Area 14a and around 3,000 in Area 14b and c if all cotton is to be harvested in the normal season. (Table 29 and 30). Meeting these cotton harvest demands has not been a particular problem thus far since one of the principal routes followed each year by migratory cotton pickers passes through the Black Prairie. Furthermore, this area is bordered all the way on the east by areas which contain substantial numbers of potentially available workers. If transportation facilities are available to permit migratory workers to follow the cotton harvest and an orderly routing of migrants to and within areas as needed can be maintained, cotton harvest demands should not become a problem in this or other areas normally served by migratory pickers.

On the other side of the labor picture is a frequently overlooked second aspect of the labor "problem" of this and similar crop-specialty areas. Tables 29 and 30 indicate that requirements represent 80 percent or more of the capacity of the regular labor supply in only 6 months of the year in Area 14b and c; only 5 months in Area 14a. In the remaining 7 months, the regular labor supply in the northern portion of the area is only half to two-thirds fully utilized. The percentages run slightly higher in sub-areas 14b and c. Underemployment of adult males in Area 14a's regular labor supply in 1943 was equivalent to 30,000 to 50,000 full time workers 7 months of the year. In the lower portion of the Black Prairie underemployment amounted to the equivalent of more than 10,000 adult male workers in 6 of the 12 months. The spring cotton chopping peak appears to be the primary obstacle to more efficient use of farm labor in this area. This being the case, we might well ask ourselves this question: How much further could the regular labor supply in the Black Prairie be reduced without impairing production in the area, if an adequate supply of seasonal laborers to meet this spring peak could be assured? Or put the other way, how much further could production in this area be expanded before labor became a real limitation? A major problem in cotton producing areas like this one is how to provide employment for a large number of farm workers during slack seasons when they are not needed locally on farms.

But these tables and charts are at best estimates based on stated assumptions of availability of farm people for work as needed. Calculated full employment is never possible to achieve in practice for there must always be a reserve for a safety margin. Furthermore such an overall area comparison must necessarily assume that every worker in the area is ready and willing to fill every job opening immediately without any loss of time regardless of where in the area it might be. The net effect of these assumptions is to underestimate the total number of workers actually needed to do all the work in an area and the amount of recruitment and placement necessary to getting workers where they are needed at the time needed. A closer approximation of the true situation within an area as regards the amount of intra-area recruitment and placement necessary to meeting labor needs may be made by considering the excess of demand over the regular and feasible labor supply on all of the farms in the five major size groups in the manner of Tables 31 and 32. For the present, only those periods in which 1943 requirements exceed the regular farm labor supply are shown together with the number of workers needed in each such period from the on-farm reserve and non-farm sources. These results were obtained by multiplying the number of additional

Table 29 - Labor utilization, in Area 14 a, the Upper Black Prairie Area 57

## Area total

Total labor requirements				Workers avail-	Additional
total	As percent of supply from	man months	Regular labor supply	able for other employment 1/	hired workers needed 2/
Number	Percent	Number	Percent	Number	Number
January	54600	56	46	42300	0
February	46900	48	39	50000	0
March	53300	55	45	43600	0
April	92800	96	78	4100	0
May	120100	124	100	0	500
June	115400	108	96	0	0
July	65600	61	55	41500	0
August	75900	71	63	31200	0
September	1168600	174	141	0	49000
October	125400	129	105	0	5800
November	47300	49	40	49600	0
December	53000	55	44	43900	0

Table 30 - Labor utilization, in Area 14 b&c, the Lower Black Prairie Area  
Area total

Total labor requirements				Workers avail-	Additional
Total	As percent of supply from	man months	Regular labor	able for other	hired workers
Number	percent	Number	Percent	Number	Number
January					
February	32100	74	57	11000	0
March	29300	68	52	13800	0
April	36800	85	65	6300	0
May	46200	107	82	0	0
June	54700	127	97	0	0
July	33600	68	60	15700	0
August	34700	70	62	14600	0
September	53700	109	95	0	0
October	59100	137	105	0	2700
November	51300	118	91	0	0
December	27000	63	48	16100	0
	27900	65	49	15200	0

1/ Excess of regular labor supply over requirements in man equivalents.

2/ Excess of requirements over feasible on-farm supply in man equivalents.

Table 31 - Mobilization of labor necessary to meeting requirements  
of farms in designated cropland size groups,  
Area 14 a, Upper Black Prairie Area 1943

Area Total

Cropland size groups	Workers needed from reserve supply 1/				Additional 2/ seasonal hired workers needed	
	Periods of need	Man equivalents		Persons	Number	Man equivalents
		Number	Percent of reserve			
Group I (0-50 acres)	None	None	0	None	None	None
Group II (51-100 acres)	May	4000	48	8000	None	
	September	8240	100	16480	15900	
	October	8240	100	16480	1420	
Group III (101-180 acres)	April	3320	78	6640	None	
	May	4260	100	8520	5210	
	June	2490	100	4980	4380	
	September	4260	100	8520	15200	
	October	4260	100	8520	5920	
Group IV (181-300 acres)	April	3670	100	7340	890	
	May	3670	100	7340	6990	
	June	2070	100	4140	6160	
	September	3670	100	7340	17100	
	October	3670	100	7340	7400	
Group V (over 300 acres)	April	920	61	1840	None	
	May	1500	100	3000	4880	
	June	630	100	1260	5060	
	September	1500	100	3000	9800	
	October	1500	100	3000	4560	

1/ Excess of requirements of over "regular labor supply". Where additional hired labor is needed complete utilization of reserve supply is assumed. Since "reserve" is composed of women and school children, a ratio of 40 percent was used as a conversion factor.

2/ After fully utilizing "feasible on-farm supply".

Table 32 - Mobilization of labor necessary to meeting requirements  
of farms in designated cropland size groups,  
Area 14 b & c, Lower Black Prairie Area 1943

Area Total

Cropland size group	Workers needed from reserve supply 1/				Additional 2/ seasonal hired workers needed				
	Periods of need	Man equivalents		Persons	Number	Man equivalents			
		Number	Percent of reserve						
Group I (0-50 acres)	None	None	0	None		None			
Group II (51-100 acres)	April	460	7	920		None			
	May	2750	43	5500		None			
	September	4920	77	9840		None			
Group III (101-180 acres)	April	1500	85	3000		None			
	May	1770	100	3540		2170			
	August	1460	100	2920		1770			
	September	1770	100	3540		3670			
	October	1770	100	3540		1590			
Group IV (181-300 acres)	January	450	56	900		None			
	March	810	100	1620		400			
	April	810	100	1620		2460			
	May	810	100	1620		4490			
	June	450	100	900		580			
	July	450	100	900		340			
	August	450	100	900		4390			
	September	810	100	1620		5230			
	October	810	100	1620		3300			
Group V (over 300 acres)	January	450	100	900		30			
	March	450	100	900		350			
	April	450	100	900		1870			
	May	450	100	900		3200			
	June	270	100	540		562			
	July	270	100	540		400			
	August	270	100	540		3020			
	September	450	100	900		3690			
	October	450	100	900		2610			

1/ Excess of requirements of over "regular labor supply". Where additional hired labor is needed complete utilization of reserve supply is assumed. Since "reserve" is composed of women and school children, a ratio of 40 percent was used as a conversion factor.

2/ After fully utilizing "feasible on-farm supply".

workers needed on the average farm in each size group as calculated from the sample by the estimated area total number of farms in that size group. The assumption of labor fluidity is now reduced to farms of the same size and the error is likewise reduced as "demand" farms have been largely separated from "supply" units. For the sake of simplicity, it was assumed here as in other instances throughout this report that the resident reserve labor supply is drawn upon first to meet requirements over and above the capacity of the regular labor force.

On this basis the seasonal labor problem assumes considerably different proportions. For example, the overall area comparisons indicated only 500 workers in addition to the feasible on-farm supply would be needed during May in Area 14a. According to Table 31, however, some 17,000 of the workers on Group I and II farms would have to help on the larger units of the area throughout the month if this minimum requirement for additional seasonal workers were to be realized. In addition some 27,000 women and children (11,000 man equivalents) or practically all of the on-farm reserve would need to help on their own farm during the cotton chopping season. Similarly about 10,000 seasonal workers in addition to their resident supply are needed during May in Area 14b and c by Group III, IV and V farms even after their feasible supply has been fully mobilized. Since earlier indications were that no additional workers from non-farm sources were needed for the area as a whole, at least part of these demands could be met by labor already on farms in the area. Actually more workers are hired during cotton harvest than any comparison of needs and available on-farm supply would indicate. This is due to the fact that most of the cotton on the larger farms and much of that on middle-size units is picked by migratory pickers. These migrants ordinarily pass through the area in sufficient volume to harvest the bulk of the crop in a relatively shorter period of time than labor requirements set up on a monthly basis indicate.

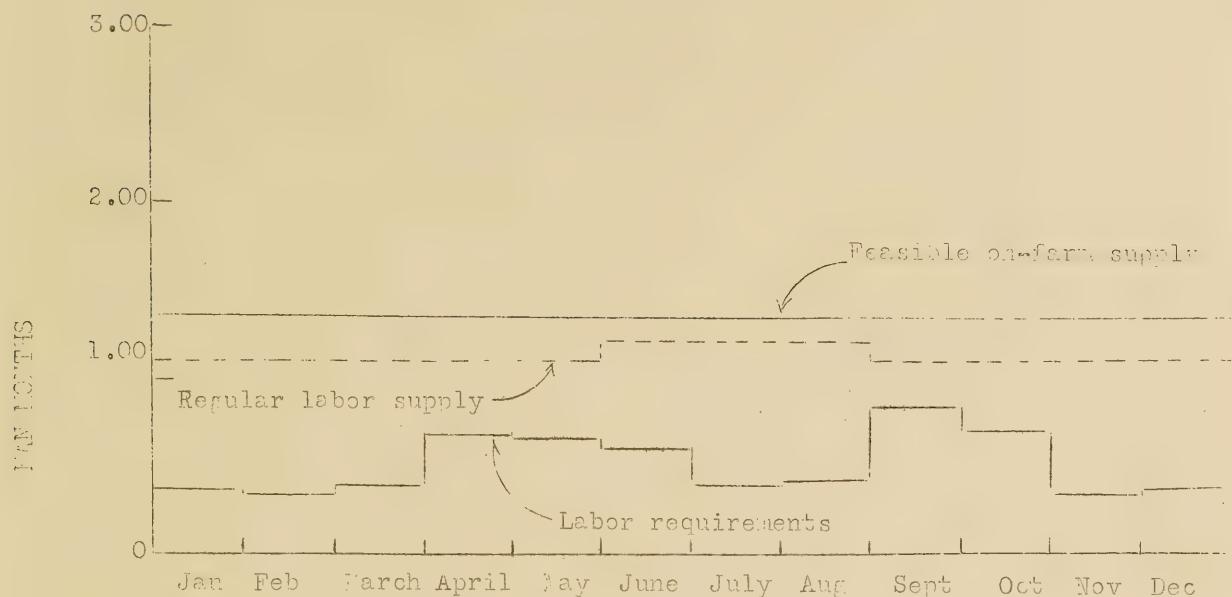
A major difficulty in supplying seasonal labor needs on the large farms in any area from under-employed workers on very small farms within the same area arises from the conflict of operations. All farmers have some work to do on their own farms and prefer to get their work done before seeking employment on other farms. It is equally logical that an operator hiring seasonal workers should want them immediately when the need arises. Where the number of workers employed does not affect the operator's total labor expense as in cotton chopping or picking, he will usually try to hire as many as he can use effectively and get the work done as quickly as possible. This makes full use of under-employed workers within an area most difficult. It is also this simultaneous demand for short-term employment of day hands and piece-rate workers that makes "employer orders" for labor so difficult to interpret in terms of total county or area needs.

#### Supply and Demand Situation on Farms of Different Sizes

To more fully understand the entire farm labor situation in an area, it is necessary to look rather closely at the supply-demand situation in all twelve months on farms of different sizes. Charts 12, 13 and 14 illustrate graphically for Area 14a the relationship between labor requirements (Table 33) and the two levels of on-farm labor supply (Table 34) on the average farm in each of the designated cropland size groups, and so indicate the extent of seasonal under-

## GROUP I (0-50 ACRES CROPLAND)

Includes about 11,250 farms or 19% of area total



## GROUP II (51-100 ACRES CROPLAND)

Includes about 28,400 farms or 48% of area total

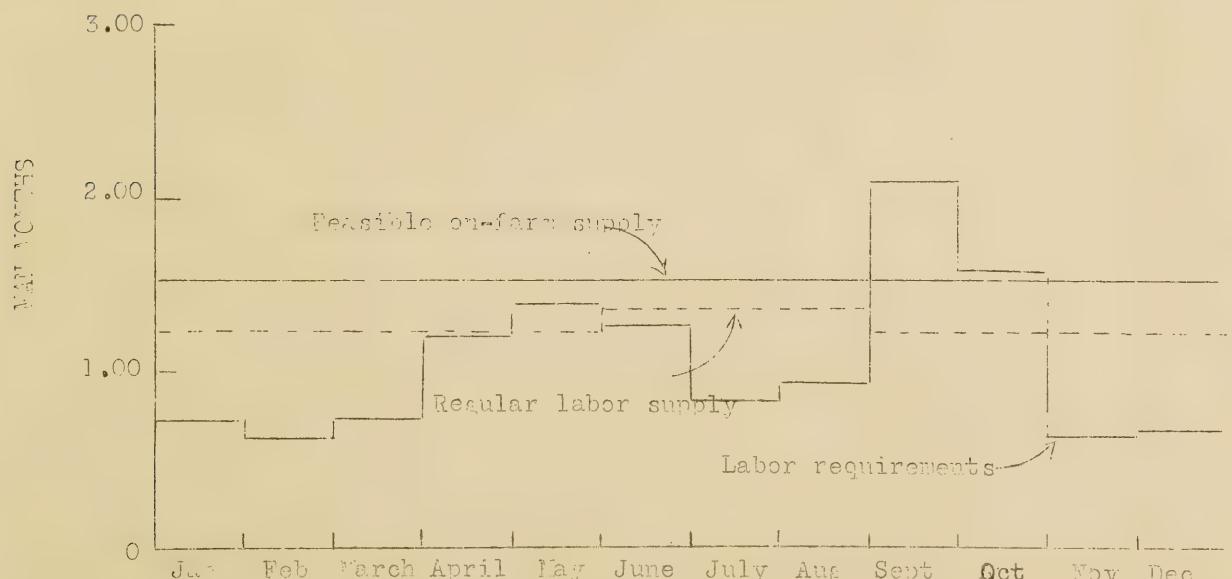
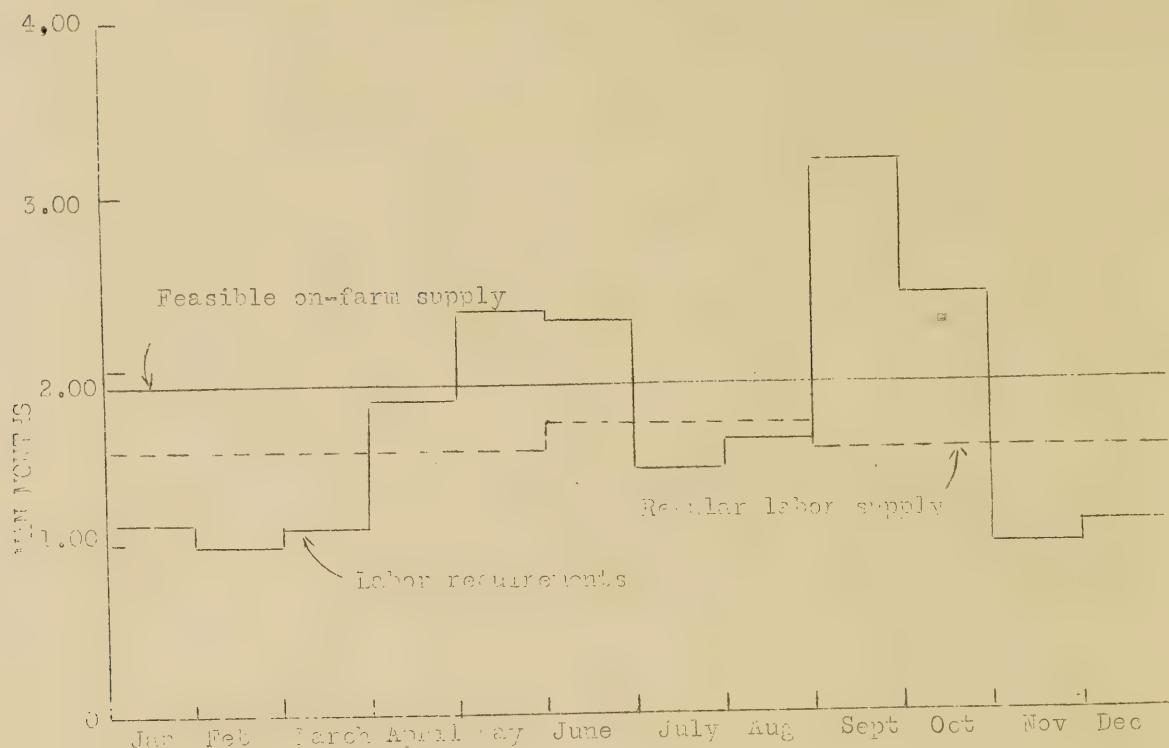


Chart 12. - Labor required and supply available on farms in designated cropland size groups in Area 14, The Black Prairie Area, 1943. Average number of workers per farm in man month equivalents.

GROUP III (101-180 ACRES CROPLAND)  
Includes about 11,840 farms or 20% of area total

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GROUP IV (181-360 ACRES CROPLAND)  
Includes about 5920 farms or 10% of area total

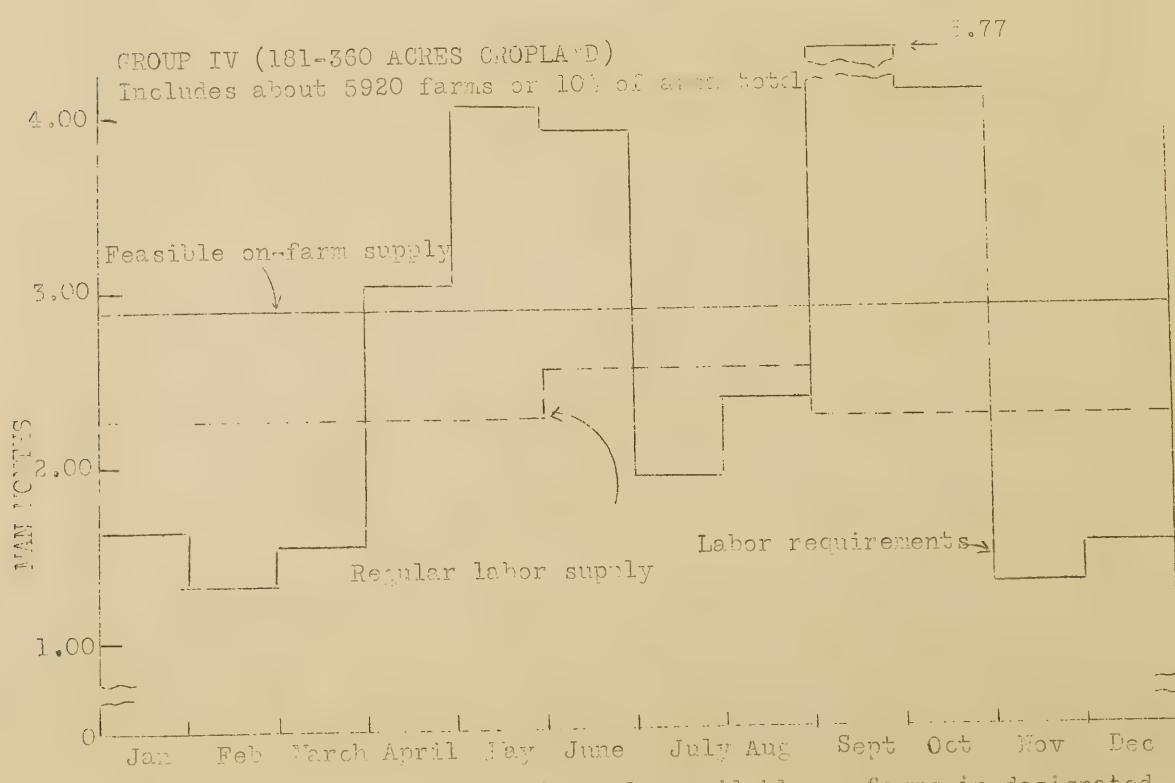


Chart 13. - Labor required and supply available on farms in designated cropland size groups in Area 14, The Black Prairie Area, 1943. Average number of workers per farm in man month equivalents.

GROUP V (OVER 300 ACRES CROPLAND)  
Includes about 1780 farms or 3% of area total

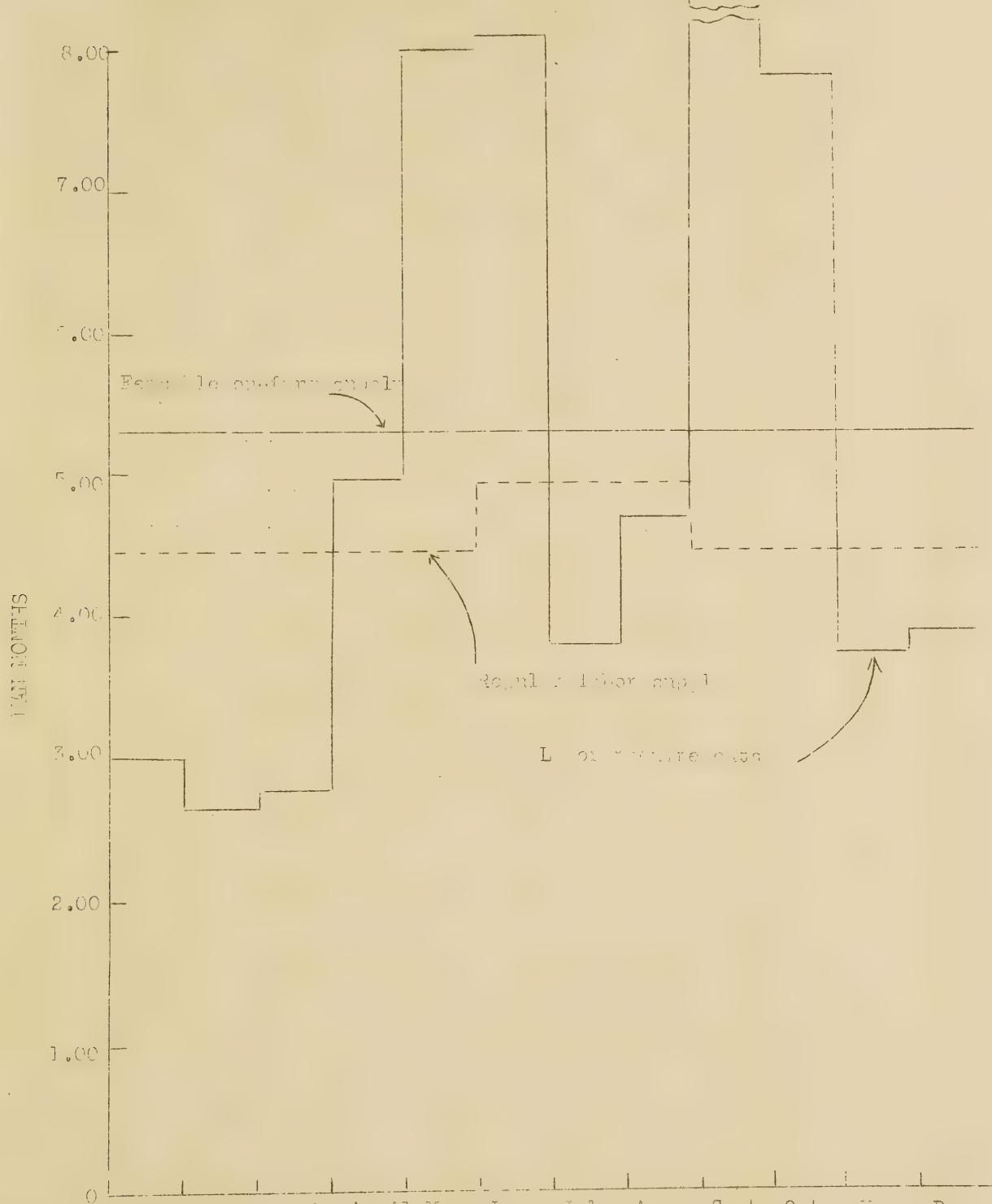


Chart 14. - Labor required and supply available on farms in designated cropland size groups in Area 14, The Black Prairie Area, 1943. Average number of workers per farm in man-month equivalents.

Table 33 - Average labor requirements of farms in designated cropland size groups, Area 14 a, Upper Black Prairie Area, 1943 <sup>1/</sup>

Man months - average per farm

Cropland size group	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	12 month total
Group I (0-50 acres)													
Crops	.09	.09	.12	.36	.44	.39	.19	.24	.66	.49	.10	.11	3.28
Livestock	.27	.25	.27	.32	.22	.21	.21	.17	.18	.21	.24	.26	2.81
Total	.36	.34	.39	.68	.66	.60	.40	.41	.84	.70	.34	.37	6.09
Group II (51-100 acres)													
Crops	.26	.20	.27	.81	1.10	1.00	.46	.62	1.77	1.22	.23	.26	8.20
Livestock	.46	.42	.46	.40	.28	.26	.37	.31	.32	.36	.41	.46	4.51
Total	.72	.62	.73	1.21	1.38	1.26	.83	.93	2.09	1.58	.64	.72	12.71
Group III (101-180 acres)													
Crops	.41	.32	.41	1.23	1.71	1.66	.90	1.13	2.72	1.88	.35	.40	13.12
Livestock	.70	.66	.68	.59	.63	.61	.52	.45	.46	.52	.61	.68	7.11
Total	1.11	.98	1.09	1.82	2.34	2.27	1.42	1.58	3.18	2.40	.96	1.08	20.23
Group IV (181 - 300 acres)													
Crops	.86	.63	.81	2.39	3.32	3.19	1.36	1.87	5.27	3.56	.65	.79	24.70
Livestock	.77	.69	.74	.64	.74	.73	.56	.49	.50	.57	.66	.75	7.84
Total	1.63	1.32	1.55	3.03	4.06	3.92	1.92	2.36	5.77	4.13	1.31	1.54	32.54
Group V (over 300 acres)													
Crops	1.28	1.00	1.13	3.55	5.90	6.04	2.59	3.65	9.76	6.62	1.24	1.24	44.00
Livestock	1.75	1.65	1.65	1.42	2.14	2.10	1.20	1.04	1.06	1.24	1.49	1.65	18.39
Total	3.03	2.65	2.78	4.97	8.04	8.14	3.79	4.69	10.82	7.86	2.73	2.89	62.29

<sup>1/</sup> Per unit labor requirements from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838, Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

Table 34 - Estimated labor supply on farms in designated cropland size groups, Area 147, Upper Black Prairie Area 1943

Man equivalents - average per farm

Cropland size group	Regular labor supply			Possible on-farm supply		
	Male		Female	Male		Female
	Sept. to May incl.	June to Aug. incl.	Sept. to May incl.	June to Aug. incl.	June to Aug. incl.	Total
Group I (0-50)	1.02	1.12	.08	.09	1.10	1.21
Group II (51-100)	1.15	1.26	.09	.10	1.24	1.36
Group III (101-180)	1.43	1.56	.11	.13	1.54	1.69
Group IV (181-300)	2.10	2.30	.16	.23	2.26	2.53
Group V (over 300)	4.29	4.73	.17	.22	4.46	4.95

Table 35 - Labor utilization on farms in designated cropland size groups, Area 14a, Upper Black Prairie Area, 1943

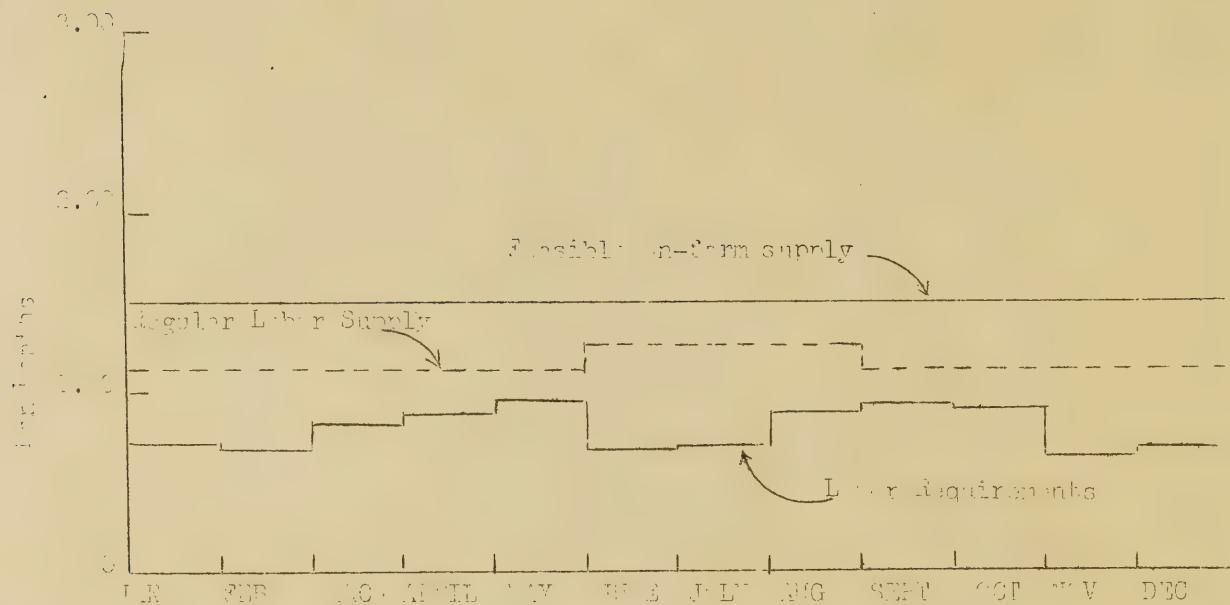
Month	Labor Requirements as Percent of Specified Supply				
	Group I (0-50)	Group II (51-100)	Group III (101-130)	Group IV (181-300)	Group V (over 300)
January	33	26	59	48	71
February	30	25	51	41	62
March	36	29	59	48	69
April	61	49	99	80	115
May	60	48	112	91	148
June	50	44	93	83	131
July	32	30	61	55	73
August	34	30	68	61	91
September	77	62	170	137	201
October	65	51	128	104	152
November	31	25	52	42	61
December	34	28	59	47	69

employment and the amount of additional hired labor (if any) needed. These relationships are expressed quantitatively in Table 33. Comparable illustrations of the labor situation on average farms of different sizes in the lower portion of the Black Prairie are found in Charts 15, 16, 17. The per farm averages on which these charts are based are summarized in Tables 36 and 37 and the supply-demand relationships for each of the twelve months in Table 38. Other than the difference in season and the less sharp cotton harvest peak in Area 14b and c, the seasonal distribution of labor requirements on farms of different sizes in the two parts of the area differ only in degree. It is apparent from Tables 39 and 40 that this situation could scarcely be otherwise in view of the marked similarity between the crop and livestock organization on the various sized farms. The small farms have a somewhat higher percentage of their cropland in corn than do the larger units; small grains are fairly important in the northern section and are infrequently grown in Area 14b and c; cotton and corn together occupy 50-60 percent of the cropland in the south compared to 65-70 percent in the north end; there is considerably more workstock relative to cropland area on the small farms than on the large and, except for the largest size groups, more on farms of the same size in the lower than upper Black Prairie; and there are many more cattle on farms of the same size in the southern than in the northern portion of the area. The considerably greater importance of cattle in Area 14b and c than in Area 14a probably results from the inclusion of a higher proportion of sandy land and part of the Post Oak strip in the lower Black Prairie. Over a third of Fayette county, one of the two sample counties on which present estimates for Area 14b and c are based, is in the Post Oak Area when actual soil and type-of-farming boundaries are followed irrespective of county lines. These same factors are probably responsible for the substantially greater percentage of farms with less than 50 acres of cropland in Area 14b and c than in the balance of the Black Prairie. The presence of more workstock relative to cropland on the small farms is particularly significant from the standpoint of labor requirements. In the present analysis, area average requirements were used for all five size groups and these were based on 67 percent of the crop acreage being worked with tractor equipment. One fourth the farms in Area 14 contain sixty percent of the cropland. Indications are that most farms having less than 50 acres cropland and many of those with 50 to 120 acres cropland are worked largely with horses. This would not much affect the level of harvest requirements nor those of the chopping period, but crop production requirements for farms using horse-drawn equipment otherwise should be higher than indicated by the present calculation and those for farms operated entirely with tractor power and equipment correspondingly lower. (Table 1).

These comparisons of the on-farm labor supply and requirements on the same size farm bring sharply into focus the contrasting labor problems on groups of farms in the same area. Group I farms in Area 14a are not able to use more than three-fourths of their regular on-farm labor supply in any month while in 7 months of the year it can be employed only about one-third of the time. Persons on farms in the same size group in Area 14b and c were similarly under-employed throughout the year, but slightly less so than those in the upper end of the Black Prairie. There are about 20,000 farms in Area 14 as a whole with less than 50 acres cropland whose 1943 regular labor supply contained some 20,000 to 25,000 adult male workers. This group would appear to offer possibilities for recruitment of year-round and seasonal workers for the larger farms in this area or elsewhere as needed. Some improvement in labor utilization would seem feasible through the consolidation of small farms into units which would more fully occupy the

## GROUP I (0-50 ACRES CROPLAND)

includes about 10,300 farms or 36% of area total.



## GROUP II (51-100 ACRES CROPLAND)

Includes about 11,440 farms or 40% of area total

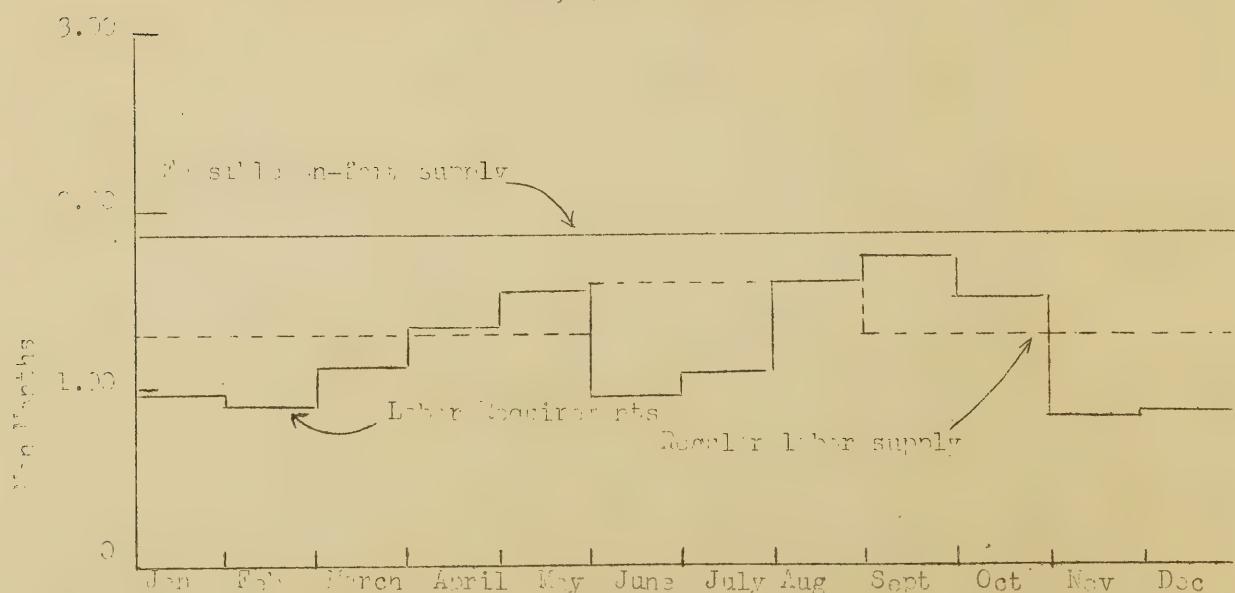
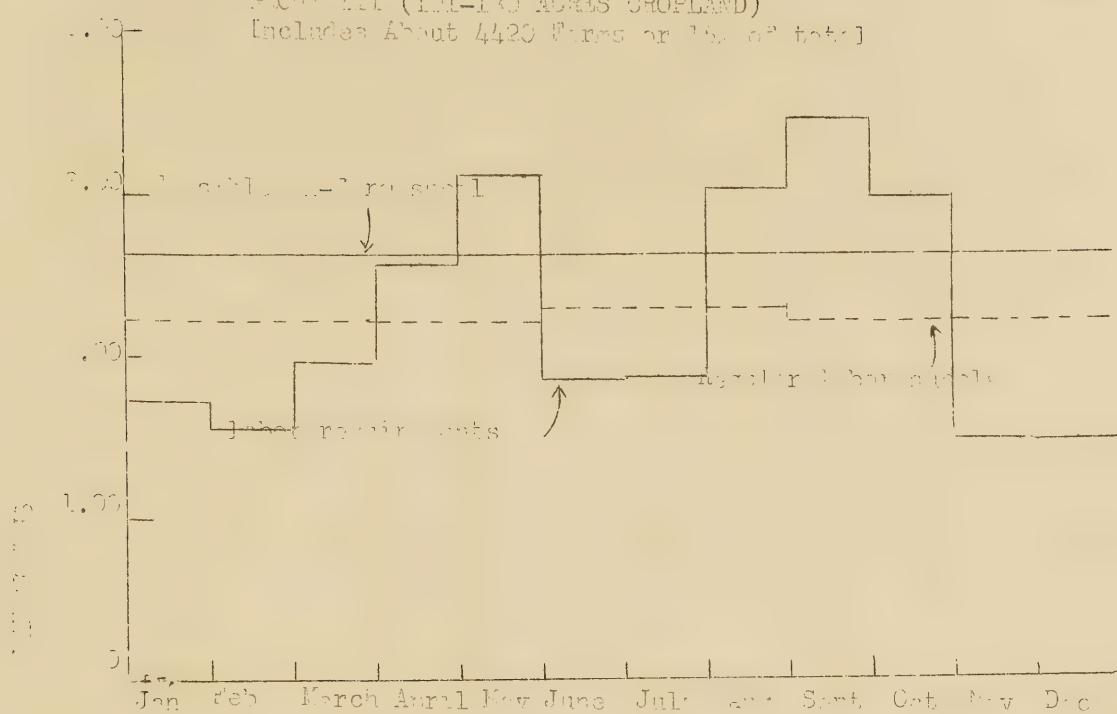


Chart 15. - Labor required and supply available on farms in disintegrated cropland size groups in Area 14, The Black Prairie Area, 1943. Average number of workers per farm in man-month equivalents.

GROUP III (101-150 ACRES CROPLAND)  
Includes About 4420 Farms or 16% of total]



GROUP IV (151-360 ACRES CROPLAND)  
Includes About 1720 Farms or 6% of total]

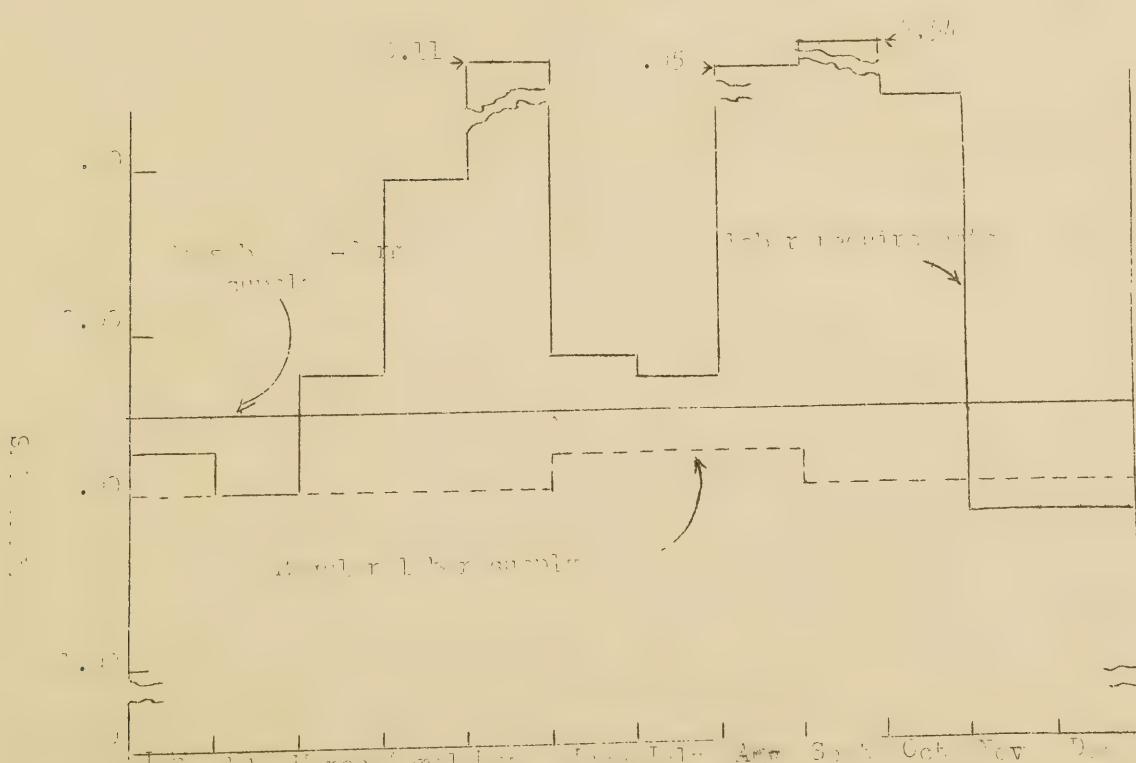


Chart 16. - Labor required and supply available for Group III and selected cropland size groups in Iowa, The "Iowa" area, 1943. Average number of hours per farm in equivalents.

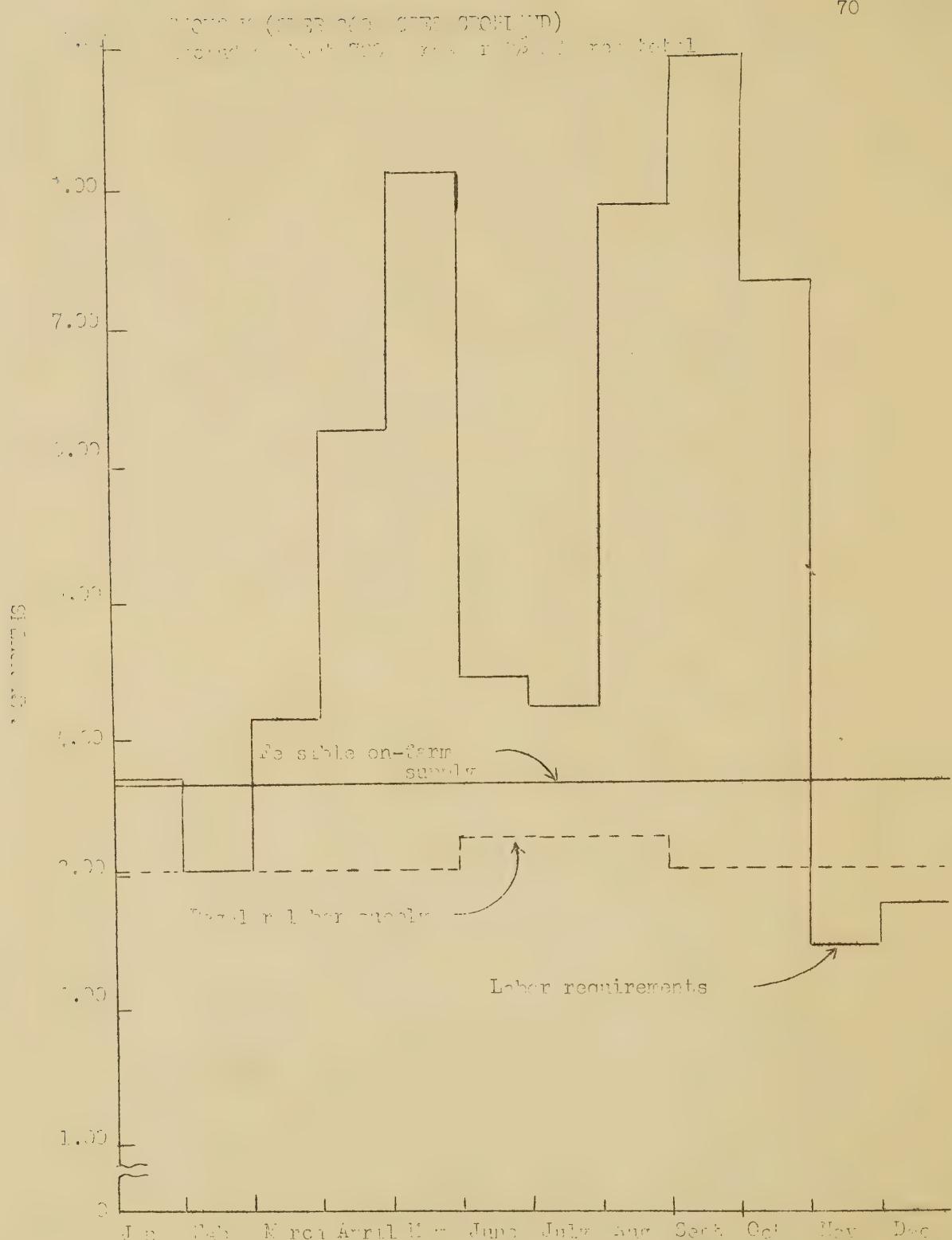


Chart 17. - Labor required and supply available on farms in designated cropland size groups in Area 14, Two Block Prairie Area, 1943. Average number of workers per farm in man month equivalents.

Table 36 - Average labor requirements of farms in designated cropland size groups, Area 14 b & c, Lower Black Prairie Area, 1943 1/

man months - average per farm

Cropland size groups	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	12 month total
Group I (0-50 acres)													
Crops	.10	.10	.19	.32	.37	.12	.24	.49	.54	.42	.09	.07	3.05
Livestock	.63	.59	.63	.57	.59	.56	.46	.39	.40	.49	.55	.61	6.47
Total	.73	.69	.82	.89	.96	.68	.70	.88	.94	.91	.64	.68	9.52
Group II (51-100 acres)													
Crops	.23	.21	.41	.74	.84	.27	.54	1.12	1.25	.96	.21	.16	6.94
Livestock	.73	.69	.70	.60	.70	.68	.54	.47	.48	.54	.63	.70	7.46
Total	.96	.90	1.11	1.34	1.54	.95	1.08	1.59	1.73	1.50	.84	.86	14.40
Group III (101-180 acres)													
Crops	.56	.46	.82	1.58	1.86	.63	1.05	2.33	2.73	2.13	.47	.35	14.97
Livestock	1.16	1.09	1.14	.99	1.26	1.23	.82	.70	.75	.86	1.00	1.11	12.09
Total	1.72	1.55	1.96	2.57	3.12	1.86	1.87	3.03	3.46	2.99	1.47	1.46	27.06
Group IV (181-300 acres)													
Crops	.95	.75	1.45	2.83	3.24	1.00	1.82	4.29	4.76	3.47	.72	.60	25.88
Livestock	1.34	1.28	1.28	1.10	1.87	1.84	.88	.76	.78	.95	1.14	1.26	14.48
Total	2.29	2.03	2.73	3.93	5.11	2.84	2.70	5.05	5.54	4.42	1.86	1.86	40.36
Group V (over 300 acres)													
Crops	1.89	1.30	2.39	4.76	5.43	1.83	3.04	6.84	7.75	6.00	1.39	1.06	43.68
Livestock	1.82	1.74	1.76	1.51	2.68	2.62	1.18	1.02	1.05	1.30	1.07	1.70	19.45
Total	3.71	3.04	4.15	6.27	8.11	4.45	4.22	7.86	8.80	7.30	2.46	2.76	63.13

1/ Per unit labor requirements from "Labor and Power Requirements for Crop and Livestock Production in Texas," Progress Report No. 838, Texas Agricultural Experiment Station and Bureau of Agricultural Economics cooperating.

Table 37 - Estimated labor supply on farms in designated cropland size groups, area 14 b&c Lower Black Prairie Area, 1943

Man equivalents - average per farm

Month	Labor requirements as percent of specified supply					Group V (301 & over)				
	Group I (0-50)		Group II (51-100)		Group III (101-180)					
	Regular	Feasible	Regular	Feasible	Regular					
labor	on-farm	labor	on-farm	labor	on-farm	labor				
supply	supply	supply	supply	supply	supply	supply				
January	64	48	76	53	77	66	117	95	122	101
February	61	46	70	49	70	59	104	84	100	83
March	73	55	87	61	88	75	140	113	136	113
April	79	59	105	74	116	98	201	163	206	171
May	85	64	121	84	140	119	262	212	267	221
June	54	46	61	52	81	71	132	118	135	121
July	55	46	69	59	81	71	125	112	128	115
August	69	58	102	87	132	116	234	209	239	214
September	84	63	136	95	155	131	283	230	289	240
October	80	60	118	82	134	114	227	184	240	199
November	57	43	66	46	66	56	95	77	81	67
December	60	45	68	47	66	56	95	77	91	75

Table 33 - Labor utilization on farms in designated cropland size groups, Area 14 ~~etc~~, Lower Black Prairie area, 1943

Cropland size group	Regular labor supply						Feasible on-farm supply				
	Male		Female		Total		Male		Female		Total
	Sept. to May incl.	June to Aug. incl.	Sept. to May incl.	June to Aug. incl.	Sept. to May incl.	June to Aug. Inc.	Male	Female	Male	Female	Total
Group I (0-5)	1.01	1.12	.12	.15	1.13	1.27	1.12	.38			1.50
Group II (51-100)	1.17	1.42	.13	.17	1.30	1.59	1.42	.44			1.86
Group III (101-180)	2.07	2.10	.16	.20	2.23	2.30	2.10	.53			2.63
Group IV (181-300)	1.87	2.05	.16	.19	2.03	2.24	2.05	.45			2.50
Group V (Over 300)	2.83	3.05	.21	.24	3.04	3.29	3.05	.62			3.67

Table 39 - Crops and livestock on average farms in designated cropland size groups, Area 14 a, Upper Black Prairie Area, 1943 74

Average per farm

Item	Unit	:					:	
		Group I: Group II: Group III: Group IV: Group V	(0-50): (51-100): (101-180): (181-300): (301& over)	Acres	(0-50)	(51-100)	(101-180)	(181-300)
Farms in sample	No.	54	127	80	39	19		
Total cropland 1/	Acres	31.5	75.9	129.1	231.2	412.9		
Corn	"	11.9	25.7	39.0	74.7	101.9		
Cotton	"	9.2	24.9	37.8	74.2	140.3		
All sorghums	"	1.6	3.4	5.8	8.6	19.8		
Sudan	"	.8	1.7	2.6	8.7	3.9		
Small Grains	"	2.4	3.3	12.8	23.5	41.4		
All hay	"	1.4	1.6	5.5	3.5	18.2		
Other crops	"	.5	1.5	1.2	2.3	31.4		
Land Used for Crops 2/	"	27.8	65.6	104.8	195.5	256.9		
As percent for total cropland	Percent	88.3	86.4	81.2	84.5	86.4		
Milk Cows	No.	1.8	3.6	5.4	5.6	11.1		
Other Cattle	No.	2.1	1.3	9.1	11.6	40.1		
Brood Sows	No.	.4	1.1	1.2	1.6	2.2		
Laying Hens	No.	58.5	74.5	87.1	72.7	176.5		
Horses & Mules	No.	1.6	2.8	3.0	3.7	7.9		

Table 40 - Crops and livestock on average farms in designated cropland size groups - Lower Black Prairie Area 1943

Average per farm

Item	Unit	:					:	
		Group I: Group II: Group III: Group IV: Group V	(0-50): (51-100): (101-180): (181-300): (301& over)	Acres	(0-50)	(51-100)	(101-180)	(181-300)
Farms in sample	No.	85	91	56	27	18		
Total cropland 1/	Acres	32.1	71.4	128.4	222.3	420.6		
Corn	"	11.2	23.8	43.1	75.1	113.8		
Cotton	"	6.8	15.9	34.5	63.4	102.1		
All sorghums	"	3.3	6.6	18.6	19.6	33.6		
Sudan	"	.7	2.3	7.4	15.3	41.6		
Peanuts	"	.3	1.7	3.0	4.1	17.4		
All hay	"	1.9	3.6	2.2	4.6	.6		
Other crops	"	.5	.6	2.7	6.6	10.4		
Land used for crops 2/	"	24.7	54.5	111.5	188.7	319.5		
As percent for total cropland	Percent	77.0	76.3	86.8	84.9	76.0		
Milk cows	No.	4.1	5.9	7.2	7.6	7.5		
Other cattle	No.	7.9	11.5	20.6	37.6	51.8		
Brood sows	No.	.5	1.0	1.7	1.1	3.3		
Laying hens	No.	151.9	69.5	196.6	175.4	243.6		
Horses & mules	No.	2.3	3.5	3.9	4.0	5.1		
All sheep	No.	1.8	.8	2.0	.7	8.6		

1/ "Cropland means farm land which in 1942 was tilled or was in regular rotation," Texas handbook 1943 Agricultural Conservation Program, AAA Southern Division, March 1943

2/ Total of listed crops.

efforts of the operator.

Farms in Groups II and III, the most common size units in this area make about as good use of their on-farm labor supply as can be expected under the present method of operation. Some increase in production requirements or reduction in regular labor supply on Group II farms could probably be offset by utilizing more fully the reserve supply during spring months and using more seasonal workers to meet peak requirements. How feasible such adjustments are under existing conditions cannot readily be said. They are however worthy of consideration.

Farms with more than 100 acres of cropland present a different type of problem -- that of meeting heavy demands for seasonal workers and, if the present indications are correct, of supplementing the year-round labor supply on Group IV and V farms in Area 14b and c. There seems good reason to believe, however, that random fluctuation common to small samples and substantial under-reporting of workers on these large farms is responsible for what appears here to be an impossible situation in which requirements exceed the supply in 10 months of the year.

The composition of the on-farm labor supply as shown in Tables 41 and 42 has particular significance as regards both of these types of labor problems. It is frequently assumed that practically all of the people living on small farms are either too old or otherwise incapacitated to do full time farm work. While the present data do not indicate health status, it will be noted that males 20-54 years of age make up about two-thirds the feasible labor supply on Group I farms. Since all farms in Group I averaged 1 adult male worker each throughout the year, most farms must have had one such worker in their labor force. From the standpoint of recruitment possibilities, it is significant that practically all of the workers on the small farms were classified as "family". On the basis of the "type of worker" classification, it would appear that a family size farm in Area 14 contains something less than 100 acres of cropland. So far as Group III, IV, and V farms are concerned, the significance of the age-sex composition of their labor force lies in the percentage comprised by males 18-26. It is not possible to determine from this summary the percentage of farms having men 18-26 years of age in their labor force nor precisely the percentage which men of their age contribute to the labor supply of the group. Fully 10 to 15 percent of the labor supply on farms over 50 acres cropland in Area 14 is in the age group from which Selective Service is now drawing to meet its demands.

It is usually assumed as in the case of the overall area comparisons, that underemployed workers on small farms become seasonal wage hands on larger farms during periods of peak demand. Also that these under-employed farm workers find considerable supplemental employment off their farms throughout the year. Tables 43 and 44, however, fail to bear out either of these assumptions as little difference between size groups is apparent in the percentage of farms reporting off-farm employment during 1942 or in the percentage of persons on the farms who were so employed.

Indications are that more of the work done off the home farm by persons

Table 41 - Composition of the feasible on-farm labor supply by designated cropland size groups, Area 14 a, Upper Black Prairie Area, 1943

Percent of group total supply

Characteristic	: Group I :(0-50)	: Group II :(51-100)	: Group III :(101-180)	: Group IV :(181-300)	: Group V :(over 300)
<u>Sex of worker</u>	:	:	:	:	:
Male	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
Female	: 82.0	: 82.3	: 82.1	: 79.7	: 89.2
	: 18.0	: 17.7	: 17.9	: 20.3	: 10.8
<u>Age of worker</u>	:	:	:	:	:
10 - 13 years	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
14 - 19 years	: 2.4	: 4.9	: 3.9	: 6.6	: 3.0
20 - 39 years	: 15.6	: 11.3	: 12.6	: 11.9	: 17.7
40 - 54 years	: 27.1	: 40.0	: 39.9	: 40.9	: 35.4
55 - 64 years	: 38.9	: 32.1	: 30.8	: 30.8	: 33.1
65 years and over	: 14.3	: 10.1	: 11.4	: 9.1	: 10.1
	: 1.7	: 1.6	: 1.4	: .7	: .7
<u>Type of worker</u>	:	:	:	:	:
Family	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
Hired	: 96.0	: 80.8	: 68.7	: 53.2	: 24.3
Sharecropper	: 4.0	: 13.4	: 19.4	: 23.2	: 46.5
	: 0.0	: 5.8	: 11.9	: 23.6	: 29.2
	:	:	:	:	:
	:	:	:	:	:

Table 42 - Composition of the feasible on-farm labor supply by designated cropland size groups, Area 14 b&c, Lower Black Prairie Area, 1943

Percent of group total supply

Characteristic	Group I (0-50)	Group II (51-100)	Group III (101-180)	Group IV (181-300)	Group V (over 300)
<u>Sex of Worker</u>	:	:	:	:	:
Male	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
Female	: 74.7	: 76.1	: 79.9	: 82.0	: 83.1
	: 25.3	: 23.9	: 20.1	: 18.0	: 16.9
<u>Age of worker</u>	:	:	:	:	:
10 - 13 years	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
14 - 19 years	: 5.1	: 7.1	: 5.6	: 4.0	: 2.7
20-- 39 years	: 14.3	: 14.1	: 17.2	: 14.9	: 12.3
40 - 54 years	: 30.8	: 31.8	: 33.4	: 34.0	: 51.5
55 - 64 years	: 38.8	: 36.2	: 28.2	: 22.3	: 23.7
65 years and over	: 8.9	: 9.4	: 8.6	: 8.7	: 8.3
	: 2.1	: 1.4	: 1.0	: 1.1	: 1.5
<u>Type of worker</u>	:	:	:	:	:
Family	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
Hired	: 94.2	: 89.0	: 75.6	: 61.9	: 32.8
Sharecropper	: 4.8	: 4.8	: 9.9	: 21.7	: 23.0
	: 1.0	: 6.2	: 14.5	: 16.4	: 44.2
	:	:	:	:	:

Table 43 - Work off farm during 1942 by persons on farms in designated cropland size groups, Area 14a, Upper Black Prairie Area

Items	Group I (0-50)		Group II (51-100)		Group III (101-180)		Group IV (181-300)		Group V (over 300)	
	M	F	M	F	M	F	M	F	M	F
Farms reporting work off farm in 1942										
as percent of all farms										
Persons reporting working off farm as										
percent of all persons 10 yrs. & over										
Months worked off farm in 1942										
average per all farms										
	1.4	.8	.6	.1	1.7	.4	1.2	1.3	1.5	0
Farms reporting work off farm:										
Persons working off farm - average										
per farm										
Months worked per person working										
off farm										
Months worked per farm reporting	4.9	3.8	5.6	3.8	5.7	2.6	4.2	6.9	7.0	0
	7.1	11.2	6.0	5.0	10.9	5.8	5.2	16.0	9.3	0

Table 44 - Work off farm during 1942 by persons on farms in designated cropland size groups, Area 14b and c, Lower Black Prairie Area

Items	Group I (0-50)		Group II (51-100)		Group III (101-180)		Group IV (181-300)		Group V (over 300)	
	M	F	M	F	M	F	M	F	M	F
Farms reporting work off farm in 1942										
as percent of all farms	11	2	13	6	16	9	12	0	28	17
Persons reporting working off farm as percent of all persons 10 yrs. & over	9	4	16	6	10	6	10	0	17	9
Months worked off farm in 1942 average per all farms	1.1	.5	2.3	1.1	1.8	.8	1.7	0	3.6	.7
Farms reporting work off farm:										
Persons working off farm - average per farm	1.3	3.0	2.3	2.2	1.8	1.4	2.3		2.4	1.3
Months worked per person working off farm	7.5	6.8	7.4	8.6	11.4	6.4	6.1		5.3	3.0
Months worked per farm reporting	10.0	20.5	16.8	19.0	11.4	8.6	14.3		12.8	4.0

in Area 14a might have been seasonal and perhaps farm work than in the lower part of the Black Prairie. In the latter instance persons reporting off-farm employment worked an average of more than 6 months compared to 3-6 in Area 14a. Data on off-farm employment contained in the 1943 Manpower Inventory does not provide a very reliable basis for estimating the true importance of supplemental employment. Since less than a fourth of the farms in any size group in Area 14a and even fewer in Area 14b and c reported work off the farm, it is reasonably certain that part-time employment is not a particularly important means of supplementing farm income in the Black Prairie Area.

#### Employment per worker per year

By assuming that labor requirements per farm measure the amount of productive employment available to workers on that farm, an estimate may be made of the number of days of employment per worker per year afforded by the average farm in each size class (Tables 45 and 46). Those estimates are based on the average number of workers in the regular labor supply for it is only this segment which is available for full time employment. Family incomes on farms in Groups II, III, IV and V would be higher than this comparison indicates as some employment is available for some other members of the family part of the year. These tables further emphasize the conditions of under-employment on small farms. It appears that about 200 days a year is a practical maximum of employment in Area 14 with its present farming system. The excessively high figures for Group IV and V farms in Area 14b and c bear out the assumption of under-reporting of workers on these large units. Farms under 50 acres cropland provide only 109 days employment for the operator in Area 14a and about 164 days in Area 14 b and c. Judging simply by the standards of other farms in the same area, the operators on Group I farms in the whole of Area 14 and to a lesser extent those on Group II farms in Area 14a are substantially under-employed. This situation is little altered by adding in the supplemental off-farm work. The pressure of labor requirements on the resident supply has an important bearing on the amount of labor used per acre of crops. A recent study of the use of labor on farms of different sizes in Bell County revealed that farms with less than 60 acres cropland used an average of 5.5 days of labor per acre in 1941 compared to 3.8 days for farms 60-119 acres cropland and 2.5 days for farms having more than 120 acres cropland. <sup>25/</sup> Much of this difference is due to the greater proportion of work done with tractor equipment on the larger farms.

Looking to the more distant future, the more pressing farm labor problems of the Black Prairie area will likely be those concerned with increasing both the amount and effectiveness of employment of workers now on farms. The latter will be the less difficult as the area is well adapted to machine operation. How to remedy a situation of chronic under-employment on a large number of small farms and seasonal unemployment characteristic of specialized crop production on most farms in the area will surely be a much more difficult problem. Any increase after the war in the number of people on farms in this area will surely aggravate these conditions and render a lasting solution to the real labor problem increasingly difficult.

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<sup>25/</sup> Progress Report No. 862. Texas Agricultural Experiment Station, October, 1943  
This report also contains a detailed discussion of various aspects of labor use, cost of hired labor, kind of workers used, etc.

Table 45 - Employment opportunities afforded by farms in designated cropland size groups, Area 14a, Upper Black Prairie Area 1943

Regular labor supply	Unit	Group I	Group II	Group III	Group IV	Group V
Farm employment per worker 1/	Acres	(0-50)	(51-100)	(101-180)	(181-300)	(over 300)
Percent of days available 2/	Days	109	179	203	200	198
Off farm employment per worker	Percent	45.4	74.6	84.6	83.3	82.5
Total employment per worker	Days	39	11	27	22	7
Percent of days available 3/	Percent	148	190	230	222	205
		56.9	73.1	88.5	85.4	78.8

Table 46 - Employment opportunities afforded by farms in designated cropland size groups, Area 14 b and c, Lower Black Prairie Area 1943

Regular labor supply	Unit	Group I	Group II	Group III	Group IV	Group V
Farm employment per worker 1/	Acres	(0-50)	(51-100)	(101-180)	(181-300)	(over 300)
Percent of days available 2/	Days	163	197	205	237	235
Off farm employment per worker	Percent	67.9	82.1	85.4	98.7	97.9
Total employment per worker	Days	27	50	23	16	28
Percent of days available 3/	Percent	190	247	228	253	263
		73.1	95.0	87.7	97.3	101.2

1/ As measured by labor requirements; i.e., total days per year which an average worker in the regular labor supply could find employment at farm work on the home farm.

2/ Assuming 240 days available for farm work

3/ Assuming maximum of 260 days available for all kinds of work.

APPENDIXSOME NOTES ON METHODProcedure Followed in Drawing Sample and Transcribing Data

The 1943 Farm Plan Work Sheet enumeration had almost been finished when the present study was initiated, leaving no alternative to drawing the sample from this incomplete universe. Due to the wide variation between counties with respect to office procedure followed by the Agricultural Adjustment Agency, instructions for drawing the sample and transcribing the data were necessarily general, covering only major points. Under these circumstances, it is inevitable that much of the desired precision in sampling was lost. From the standpoint of practical use, however, these inadequacies in the sampling technique did not in themselves particularly impair the value of these data.

For a study such as the present one, it is essential that each sample unit be a complete farm with respect to land and the people which operate it. The practice followed by the Agricultural Adjustment Agency of classifying each ownership tract as a "farm" for administrative purposes necessitates special handling of the Farm Plan Worksheet data to make them apply to this idea of an "operating unit" or the popular concept of a farm. The operating unit base used in the present analysis is not identical, therefore, with either the AAA or Census (for southern states) classification of farms. The problem of developing a reliable current basis for expanding sample indications to area total estimates is further complicated by this lack of comparability between the bases on which agricultural statistics are compiled. The procedure followed in this study in combining AAA worksheets to make the data relate to complete operating units produced fairly accurate results and was not particularly time consuming. Briefly it was as follows:

1. The original sample for each selected county was drawn by the County Extension Agent following a uniform set of instructions. These instructions stated the number of schedules needed from the respective county and informed the County Agent that this number should be secured by drawing each 5th, 10th, 14th, or whatever the proper proportion of the worksheets tabulated in that county might be. For example in Cass County it was each 16th, in Floyd each 14th, etc. Agents were cautioned to take the worksheets as they came to them regardless of whether they were incomplete or covered a tract which was reported to be idle in 1943.
2. From each sample schedule all the data from page 1 of the Farm Plan Worksheet (crops and livestock on hand or expected for 1943) and page 3 of the Farm Manpower Inventory (on-farm labor force) were transcribed to blank copies of these forms supplied for this purpose. Agents were asked to complete any incomplete schedules from the original AAA Farm Plan Sheet.
3. Following an explanation of the reasons for the subsequent procedure, Agents were instructed to complete the following steps:
  - "a. After the desired data for the sample farms have been copied for each farm in the sample, check the operator's name against the AAA '1943 Alphabetical List of Operators and Landlords' to determine if he operates any other land. If this list is not available the '1942 Multiple Farm List' will serve this purpose fairly well.
  - "b. For each operator shown as operating two or more 'AAA Farms', list all of his AAA farm numbers.

- "c. Go back to the Farm Plan Worksheet file and copy the data specified under Instruction 2 for these additional tracts.
- "d. Attach these additional schedules to the original one for that operator."

Relying upon the 1942 Multiple Farm List for information regarding additional worksheets resulted in some inaccuracies due to changes between 1942 and 1943 in combination of worksheets, failure to list some idle units, etc. Further difficulties arose from our inability to classify "idle" farms properly with respect to operating units. This was particularly important in some of the East Texas counties where a large number of farms are now reported to be idle. In some counties worksheets for idle tracts had been filed separately from those covering operated units, thereby precluding their inclusion in the sample.

Many of the difficulties noted here and other impairing the accuracy of the final results could be avoided by selecting the sample farms before the enumeration is made and having the interviewer secure from the operators current information on other worksheets involved in the operation unit. Some upward bias in the size distribution will result from this method of drawing a sample regardless of whether the sample AAA farms are selected before or after the enumeration is made. This can be overcome by advance planning for checks on the nature and extent of this bias. In the present study the distributions of number of farms by size groups were adjusted by studying the extent and amount of combination in the original sample and trial weighting of three or four factors which responded differently to changes in size of farm. This correction for sample bias is responsible for the proportion of farms in the several size groups being different from the estimated percentages for the area.

As indicated earlier, a major problem in analyzing these data is that of estimating the total number of units actually being operated in the area during the current year. This estimate together with that of the acres of cropland comprising these operating units is essential as a basis for deriving area total estimates from the sample. Since AAA had summarized their worksheet data (number of "farms" and cropland) by 1943 operational status, i.e., idle or operated, idle tracts were deleted from the sample. A more precise classification of farms as regards this criterion would unquestionably improve the accuracy of the final results.

In estimating the total number of complete farm units actually operated in each area, consideration was taken of:

1. Ratio of the 1940 census number of farms, excluding croppers, to the 1940 AAA number of farms.
2. Sample ratio of 1943 operators to the total number of worksheets on which they were listed as "operator."
3. Supplemental indications from check data and judgement of the extent of abandonment and combination of units since 1940.

Some minor revisions of these original estimates were made on the basis of tests of accuracy in expanding sample data.

The establishment of a mechanism for maintaining current checks on the change in number of operated farms and acres of cropland by counties or type of farming areas would greatly facilitate the analysis and materially improve the accuracy of statistical data of all types. Through their annual Farm Plan Survey, AAA secures the necessary data for making this determination not only in total for counties and areas but by size and type of farm as well.

The "regression method" <sup>1/</sup> is one of the most reliable and easily applied methods of expanding most types of agricultural sample data to total estimates. It is particularly useful with moderately skewed distributions, such as those characteristic of data obtained by mailed questionnaires, where valid estimates cannot be obtained from a straight "per farm" or "per acre" expansion. The regression method has been used throughout the present study to secure area total estimates from the sample data and has yielded satisfactory results despite the usual limitations of data for sample counties in generalizing for an entire area. Estimates derived by using this technique were also checked against area expansion of sample ratios "per farm" and "per 100 acres cropland". Estimated crop acreages and livestock numbers were checked against independent area estimates made by the Agricultural Statistics Division, Bureau of Agricultural Economics for use in determining the 1944 production capacity for Texas. Briefly the regression method of expansion involves:

1. Determining from the sample data by a short-cut technique the constant values of the straight line regression ( $Y = a + bX$ ).
2. Multiplying (a) by the area total number of farms and (b) by the area total acres of cropland (or all land in farms).
3. Summing the above extensions to obtain an area total estimate for the item in question.

#### Labor Requirements

The following steps were taken in calculating the average labor requirements shown in the several charts and tables of the text:

1. The total number of hours of man labor required for all of the sample farms in each size group for each of the 12 months was calculated by applying to the crop acreages and livestock numbers appropriate per unit labor requirements as reported in Progress Report No. 838. <sup>2/</sup> The same area average requirements per unit were used for each of the different size groups in that area. As indicated in the text, this procedure produces some error in estimated total labor requirements for both large and small farms in areas where two or more types of power and equipment are in common use, for example; horse-drawn and two-row tractor. There are not sufficient data available on the percentage of farms in each size group using the different types of power to permit further refinement.

The data contained in Progress Report No. 838 are particularly valuable for the detailed requirements they give for all major crops and classes of livestock by type of farming areas and distribution by months, with additional breakdowns for each type of operating equipment wherever more than one level of operating efficiency exists for a significant number of the farmers in an area.

<sup>1/</sup> See "A Regression Method for Expanding Sample Indications to State Estimates", mimeographed report of Bureau of Agricultural Economic prepared by Walter A. Hendricks of the North Carolina Research Office cooperating with the Department of Experimental Statistics of North Carolina State College, Raleigh, North Carolina.

<sup>2/</sup> See "Labor and Power Requirements for Crop and Livestock Production in Texas", prepared by C.A. Bonnen and A.C. Magee of the Texas Agricultural Experiment Station and Troy Mullins of the Bureau of Agricultural Economics, USDA, College Station, Texas-June 1943. Mimeographed 31 pp.

2. Two adjustments were made in the calculated crop requirements and one in those for livestock to make them more closely approximate true operating conditions;

- a. Crop requirements were increased by 3 percent in all months in each of these four areas to compensate for incompleteness in listing and minor crops for which no labor requirement data were available.
- b. A variable adjustment for maintenance averaging about 10 percent for the year was made in both crop and livestock requirement totals. The specific amount of adjustment made by months by areas is shown in Table 47.

Table 47 - Farm maintenance requirements as percent of total labor required for crop and livestock production in four selected type of farming areas.

Month	Type of farming area			
	3 Percent	4 Percent	14 Percent	15 Percent
January	5	15	15	15
February	15	15	15	15
March	15	15	15	5
April	15	15	5	5
May	15	15	5	5
June	5	5	5	5
July	5	15	15	15
August	15	5	5	15
September	15	5	5	5
October	5	5	5	5
November	5	5	15	15
December	5	5	15	15
:	:	:	:	:
:	:	:	:	:

These variations between months were made on the assumption that the bulk of deferrable maintenance labor would be performed during slack seasons. 3/

3. In order to get labor requirements on a basis which could be compared to labor supply and also be more understandable in terms of workers needed, the total hours of labor required on all crops and livestock (adjusted) were reduced to man-months, on the basis of the estimated number of hours available for work during each respective month. Livestock requirements were converted on the basis of 240 hours (30 days of 8 hours each) for all months.

3/ It now appears that a more realistic distribution of maintenance requirements could be obtained by distributing the annual total maintenance (10 percent of crop and livestock requirement) on a variable basis comparable to Table 47 rather than calculating maintenance by months as is done here. The objection to the present method lies in the fact that during seasonal peaks 5 percent of the crop and livestock requirement is frequently higher than is 15 percent of the off season requirement.

The crop month was varied from 160 to 220 hours or from 20 days of 8 hours each during the winter months to 22 days of 10 hours each during the mid-summer. The number of hours assumed to be available for crop work in each month are:

January, February, and December-----	160
March and November-----	180
April, May, and October-----	200
June, July, August, and September-----	220

4. Finally, the group total man-month requirements were divided by the sample number of farms in each respective size group to obtain per farm averages and also expanded in the manner described above to obtain an estimate of the area total labor requirements for each size group and all farms in the type of farming area.

#### On-Farm Labor Supply

The two most commonly used approaches to estimating farm labor supply are (1) employment as measured by the number of persons doing two or more days farm work during the survey week and (2) population converted to labor supply by applying assumed rates of availability and capacity to the number of persons in different age-sex classes. The intent of the 1943 Manpower Inventory was a partial combination of the **two** approaches in that only those persons regularly engaged in farm work were to be listed, but enumeration was not limited to those persons actually working at the time the survey was made.

Employment is based on past experience and, therefore, reflects historical labor market conditions where a labor supply calculated from a population base is premised on conditions expected to obtain in the future. Therefore, in addition to the practical difficulty of securing an accurate agricultural employment base for a state or smaller geographic area, the very nature of employment data limits their use in planning and prosecuting adjustment programs. The most severe of these limitations are: employment trends cannot be projected precisely to an indication of the number of persons likely to be available for farm work at a future date; they do not accurately reflect the amount of work that can be done by the employed labor force if fully utilized; and they provide no insight into the reserve which could be called upon if needed or the adjustments required to achieve full employment.

The value of a population derived labor supply estimate for these purposes is limited chiefly by the accuracy with which the assumptions of availability **4/** and capacity **5/** of persons of different ages and sexes represent actual operating conditions. This limitation may be offset by making plans on the basis of two or more sets of assumptions for alternative lines of action. There is a real advantage in being able to proceed thus in estimating the amount of labor which might be available under assumed combinations of incentives, for then steps may be taken to provide the incentive necessary to drawing more people into the labor supply if the situation warrants.

The 1943 Manpower Inventory provided space for the enumerator to assign a

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**4/** "Availability" as used in this report refers to the proportion of a given class of workers who will be in the active labor force under specified conditions.

**5/** "Capacity" refers to the amount of work per day which the average worker in a given age-sex group can perform and is expressed in terms of the performance of an average adult male worker.

## AVAILABILITY FOR FARM WORK

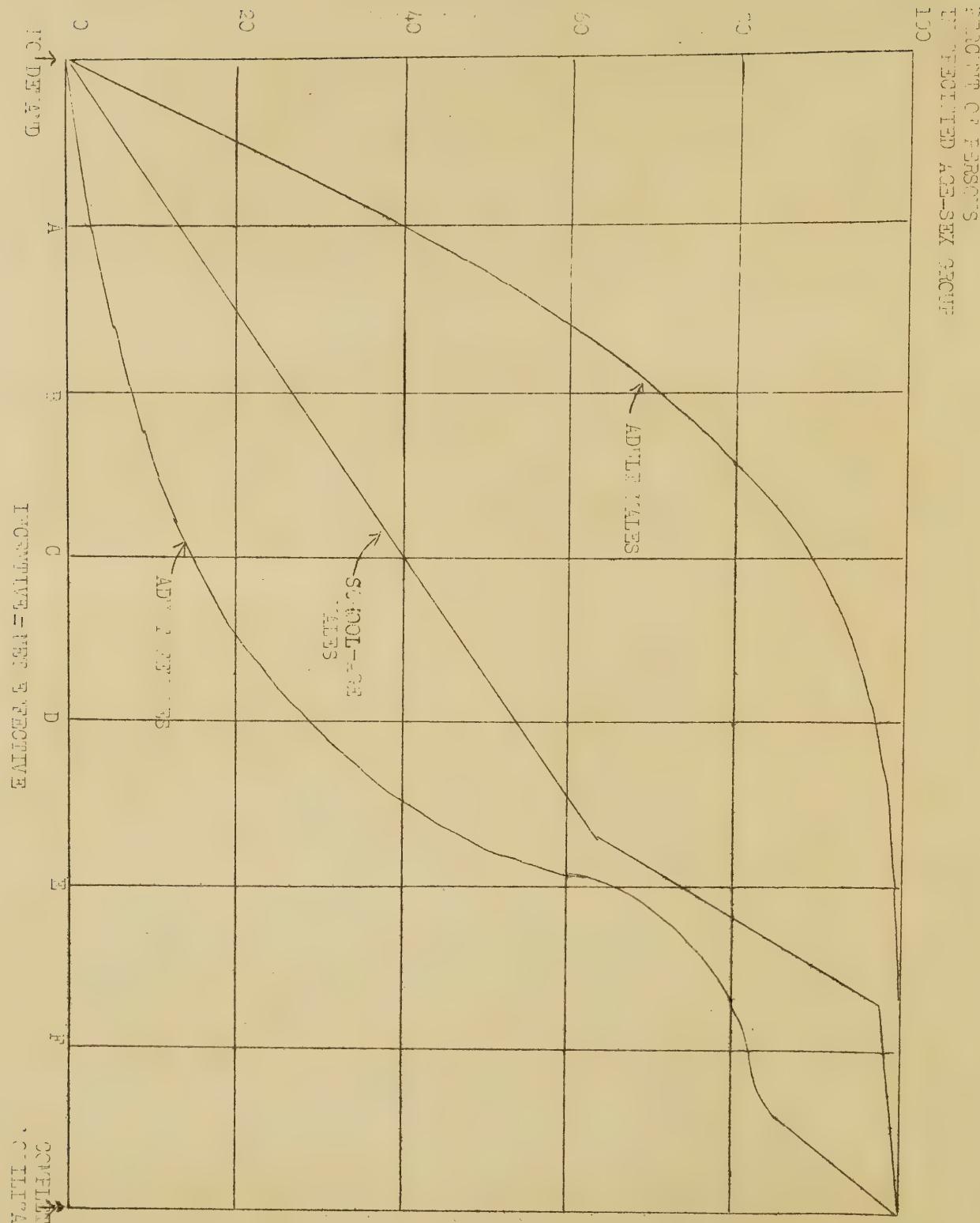


Chart 18 - Graphic illustration of availability of farm workers in selected age-sex categories assuming varying combinations of incentives.

Table 48 - Assumed availability for farm work and capacity of farm population by age and sex, Area 15, North East Sandy Lands area

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Age and sex groups	Capacity 1/	Availability for farm work 2/		Composite conversion factors	
		man equivalent	Regular labor force	Feasible on-farm supply	Regular labor force 3/ man equivalent
		Sept.-May	June-Aug.	Sept.-May	June-Aug.
Male					
10-13	.50	0	80	80	0
14-19	.30	50	95	95	.40
20-54	1.00	100	100	100	1.00
55-64	.75	100	100	100	.75
65 & over	.50	30	30	30	.15
Female					
10-13	.40	0	40	70	0
14-19	.60	15	25	60	.09
20-39	.80	25	25	60	.20
40-54	.75	30	30	70	.22
55-64	.40	10	10	30	.04
65 & over	.15	5	5	10	.01

1/ - Of average worker in specified age-sex group. See Appendix page \_\_\_\_

2/ - Percent of number of persons in respective age-sex group expected to be available for farm work. See Appendix page \_\_\_\_

3/ - Man equivalent workers per person in respective age-sex group.

"man equivalent" value to each worker listed and to enter the number of months which he or she expected to work on the home farm during 1943. The schedule data for these items were not used however, due to the incompleteness in enumeration and obvious inaccuracies in reporting. Furthermore, to use these data in the manner intended by the Manpower Inventory would require a conversion of each worker's labor on every farm to man equivalent months. This is a tremendously time-consuming task and except for individual farm analysis has little advantage over the application of factors to entire age-sex groups. These schedule data revealed not only a decided lack of uniformity and error in interpretation of the man-equivalent question, but also a tendency to estimate availability for farm work mainly in terms of past experience of local employment opportunities rather than as a potential. While estimates of informed local people of the availability and capacity for farm work of various segments of the farm population are invaluable as a basis for formulating labor supply assumptions, it is probable that they will be ultra-conservative due to their being conditioned by historical labor surpluses.

Availability of farm workers is a relative concept varying with the class of worker, incentives offered (economic, patriotic, etc.), age and sex of the worker, alternative opportunities for work, kind of work and other factors. This concept can perhaps best be illustrated graphically. The relationships between the curves of response of different classes of workers to varying combinations of incentives shown in Chart 18 are not assumed to be correct in their entirety nor is any brief held for the accuracy of the shape or level of these curves. They represent a rationalization and extension of the curves from assumed levels and relationships based on existing and anticipated conditions and may serve to illustrate the point at hand. The X-axis represents a series of increasing net incentives from no demand for any kind of farm worker to an extreme situation in which every person able-bodied or not would need to struggle for his existence. Points on the Y-axis indicate the approximate proportion of a given class of workers who would be available for farm work at a given net incentive. While the shape of the curve of availability would not necessarily vary with labor requirements, as such, labor demand has an important effect upon the incentive to work and availability therefore varies by seasons. For example, October, 1943 might present a set of conditions represented by E on the X-axis of Chart 18. About 70 percent of the women, 74 percent of the school age boys and all the adult males would then be available to meet this peak labor load. February of the same year might represent an incentive of B which would bring out 8 percent of the adult women, 26 percent of the school age boys and 70 percent of the adult males into the active farm labor force.<sup>6/</sup> In the final analysis therefore availability must be defined in terms of a given period of time and a given set of incentives. Assumptions of availability, or the percentage of the total number of farm persons in each age-sex category who might reasonably be expected to work on farms (a) regularly and (b) for short periods during rush seasons together with the respective capacity factors are shown in Appendix Tables 48, 49, and 50. These assumptions anticipate incentives for work only slightly greater than those obtaining during the season past. It should again be pointed out that the "on-farm reserve" is assumed to be "available for work" when needed but no attempt has been made here to say at what time or to what extent it will be employed, i.e. become a part of the active regular labor force. This is a highly significant distinction which the reader must understand if he is to interpret the results of this analysis in the way intended.

The capacity of the average worker in different age-sex groups varies with respect to the kind of work involved. A 14 year old boy may pick as many strawberries as a grown man, but be only half as effective as a man in pitching hay. To be absolutely accurate therefore, capacity should be differentiated not only with respect to age and sex of worker but also with respect to kind of crop activity.

<sup>6/</sup> Examples based on availability assumptions for Area 15 shown in Appendix Table 48.

Table 49 - Assumed availability for farm work and capacity of farm population by age and sex, Area 3, High Plains Cotton Area and Area 4 Rolling Plains Cotton Area

Age and sex groups	Availability for farm work 2/		Composite Conversion factors	
	Capacity 1/	Regular labor force	Feasible	Regular labor force 3/
	man equivalent	Sept.-May	on-farm	man equivalent
Male	Number	Percent	Percent	Number
10-13	.30	0	70	70
14-19	.70	50	85	85
20-54	1.00	100	100	1.00
55-64	.75	100	100	.75
65 & over	.50	30	30	.15
Female				
10-13	.20	0	30	60
14-19	.40	10	20	50
20-39	.50	20	20	50
40-54	.40	20	20	60
55-64	.20	10	10	30
65 & over	.15	5	5	10

1/ Of average worker in specified age-sex group. See Appendix page  
 2/ Percent of number of persons in respective age-sex group expected to be available for farm work. See appendix page  
 3/ Man equivalent workers per person in respective age-sex group.

Table 50 - Assumed availability for farm work and capacity of farm population by age and sex, Area 14, Black Prairie Area

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Availability for farm work 2/			Composite conversion factors		
Regular labor force			Regular labor force 2/:		
Feasible			Feasible		
Sect.-May : June-Aug.			on-farm		
Male	Number	Percent	Percent	Number	Number
10-13	.40	0	70	0	.28
14-19	.75	50	85	.38	.65
20-54	1.00	100	100	1.00	1.00
55-64	.75	100	100	.75	.75
65 & over	.50	30	30	.15	.75
 Females					
10-13	.30	0	30	0	.09
14-19	.50	10	20	.05	.10
20-39	.60	20	20	.12	.12
40-54	.50	20	20	.10	.10
55-64	.30	10	10	.03	.03
65 & over	.15	5	5	.01	.01

1/ Of average worker in specified age-sex group. See appendix

2/ Percent of number of persons in respective age-sex group expected to be available for farm work. See appendix

3/ Main equivalent workers per person in respective age-sex group.

and therefore to seasons. For want of adequate basic data and for the sake of simplicity, it has been assumed that workers other than adult males are employed chiefly on seasonal jobs and their capacity has been expressed in terms of their ability to perform these peak season crop operations. Composite availability and capacity factors for each of the areas studied were applied to the total number of persons in each of the corresponding age-sex groups on all the farms in each of the size classes to arrive at a common denominator of estimated labor supply. Since only the regular workers in hired labor and sharecropper families were listed in the 1943 Manpower Inventory, some under-reporting of the non-worker groups is to be expected in data from this source. In using the present method for estimating labor supply from a population base in which under-reporting of non-worker groups is serious, the availability factors should be raised from their population base to allow for the higher proportion of potential workers among those who are reported. Comparison of the sex ratios and age-sex distribution of the sample with comparable census ratios will reveal the bias in the sample distributions.

#### Accuracy of the results

With respect to their specific application, some of the limitations of the data used in this study have been mentioned earlier. The major factors impairing the accuracy of the final results of this study may be summarized under three general headings:

1. Inadaptability of the original survey and schedule especially the Manpower Inventory to research analysis. This is not an uncommon limitation upon uses of secondary data. The limitations of sample county data as a basis for area generalization also fall in this category.
2. Incompleteness in (a) the original survey coverage and (b) the schedules which were filled. The former is relatively unimportant since upward of 80% completeness was achieved in the counties used in this study. Failure of AAA to reach all farmers in any of its programs results in some bias in such a sample and increases the difficulty of developing accurate expansion bases. Some error was doubtlessly introduced by the inevitable failure to secure all the "tracts" which comprised some operating units. These schedules which were obviously incomplete were rejected in editing. While the listing of 1943 crops and livestock was fairly complete on most schedules, 1942 acreages of crops other than cotton, peanuts and wheat were generally incomplete. It was apparent throughout that emphasis had been placed on securing complete data for war crops and major classes of livestock, less attention being given to obtaining a complete picture of the farm plant. Area estimates from these county samples for major crops and livestock as well as total labor requirements closely approximated those derived from Crop Reporting Board data for each of the areas. 7/

The Manpower Inventory was not expected to be a complete population count but rather an enumeration of persons living on the

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7/ "Wartime Capacity of Texas Agriculture"; report prepared by Bureau of Agricultural Economics and Texas Agricultural Experiment Station, October 1943.

farm who were expected to work on that farm during 1943 or who had worked there during 1942. Considerable under-reporting in the non-worker categories was anticipated. Even though all persons 10 years of age and over in the operators' family were supposed to be enumerated, careful examination of the data revealed that under-reporting of non-workers in the family group was only relatively less than in other laborer classes. Since the conversion factors for women, children and old men are very small, even substantial under-reporting in these categories would not materially affect the total labor supply estimate. Area estimates of the total number of persons in the several age-sex groups derived from these sample data were checked against comparable totals from the 1940 Census of Population. For the areas used in this study, indicated changes in worker classes appear quite reasonable and under-reporting in other groups not sufficiently great to greatly impair the accuracy of a composite supply estimate. A complete population inventory would unquestionably provide a more accurate basis for estimating on-farm labor supply.

3. Inadequate research basis for precisely estimating availability and capacity of workers in the several age-sex categories and for developing expansion bases.

Notwithstanding the limitations cited and others of lesser importance, these data are reasonably accurate and the results sufficiently reliable to warrant their acceptance as indications of existing situations. Refinements in techniques employed, in assumptions and in the conversion factors will come with the study and use of these results in building and prosecuting farm programs. This study will have served its purpose if it points the way to a clearer understanding of adjustments necessary to achieving full and efficient employment of agricultural resources.